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Wildlife in north carolina

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january 1964

Jack D

Housing Development

Wildlife needs a home, be it a brush pile, weedy hedgerow, lowland thicket, or bird house. Most of the shelters that our wildlife use are found in Nature in one form or another; but many can be improved on by man. Build a bird house this winter.

Wildlife in north carolina

The official publication of the NORTH CAROLINA WILDLIFE RESOURCES COMMISSION, Raleigh. A monthly magazine devoted to the protection and restoration of our wildlife resources and to the improvement of hunting and fishing in North Carolina.

State of North Carolina

TERRY SANFORD
Governor

North Carolina Wildlife Resources Commission

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LEE L. POWERS, *V. Chm.*.....Lake Lure
WALTER LAMBETH, JR., *Sec'y*.....Charlotte
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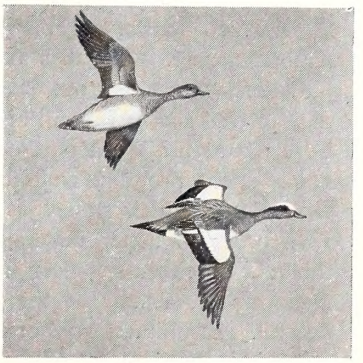

Across January's ice-blue sky streak a pair of American widgeon or baldpates. They get this latter name from the male's glistening patch of white feathers on the crown. They are nervous birds, quick to take alarm and fly. The flight is fast and irregular with many twists and turns. When feeding, widgeons often accompany diving ducks and coots in order to rob them of choice bits of vegetation which would ordinarily be beyond the widgeon's reach. Painting by Duane Raver.

WILDLIFE IN NORTH CAROLINA recognizes the need for close cooperation between State and Federal conservation agencies and the people who hunt and fish—to bring about a restoration of our renewable resources. The Editor gratefully receives for publication news items, articles, and photographs dealing with the North Carolina out-of-doors, but reserves the right to reject materials submitted. Full credit is given for all materials published.

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The author discusses the place of either sex deer hunting in North Carolina deer management

Photos by Jack Dermid

It stands to reason that deer, like all other animals, must have food to live. An abundance of readily-available, high-quality food means better-conditioned herds. Browse like this helps maintain healthy deer and good hunting.

Why Either Sex Deer

by John C. Oberheu
Former Refuge Supervisor
Western Management Areas

WHEN the State Legislature six years ago passed a bill that authorized antlerless deer hunts, many Tarheel hunters were apprehensive of what might happen to the deer herds in the state. December, 1963, saw the seventh season in the state which authorized the harvest of both antlered and antlerless deer. What has been learned about these hunts (now known as either sex deer hunts) during this time? Have they proved successful and are they accomplishing what they were meant to? What part do they play in this state's deer management program and how does this program compare with those in other states?

In order to better understand and more fully appreciate the role of either sex deer hunting in North Carolina deer management, a look at the basic goals of management is helpful. The ultimate goal of deer management is the production of the maximum number of healthy animals for removal by hunting each year without endangering range or the breeding stock or causing serious conflict with other legitimate interests. Production of game is only part of the management obligation; proper harvest is equally important and is necessary to assure maximum return for the management investment.

Underharvest is poor deer management and inevitably results in waste. Animals which could have been harvested may be lost to natural mortality. If underharvest is continued from year to year, it eventually leads to overpopulation, then to depletion of food supply, poor nutrition, parasite infestations, disease, decreased reproduction and eventually die-off. Overpopulation affects the range on which the deer subsist by resulting in overbrowse, and eventually the elimination of important food species. Overpopulation affects timber production by elimination of seedlings of some species and deforming of young trees, and it can actually alter the species composition of the future forest.

At a recent regional game management conference, a committee charged with determining needs for wildlife management research came up with a somewhat startling resolution. They were in common agreement that probably the greatest need in deer management was not a method of increasing deer numbers, but a method of assuring needed harvest of existing herds.

All too frequently this is the status of deer management in many sections of the country today. In management areas and other lands receiving adequate protection (including dog control), deer numbers have increased until they exceed the available food supply. Overpopulation herds are causing crop damage, preventing timber reproduction and seriously overbrowsing deer range that will take years to recover. In

Meadow grasses are important deer food. Outside this inclosure, the grass has been cropped severely and when compared to the protected patch, may indicate too many deer in the area. Greater deer harvest may be necessary here.

Hunting?

critical areas, deer herds are heavily infested with parasites, stunted in size and antler development, and reproducing poorly. In the most critical areas, die-offs have occurred.

But why does all this have anything to do with either sex deer hunting? Because continual growth of a deer herd cannot be controlled by bucks-only hunting! This is true regardless of the length of season or the size of the legal limit. For example, let us suppose that it is possible to remove all bucks except fawns and yearlings from a theoretical deer herd each year. After the first year with such a harvest, a maximum annual kill of only 9 percent of the total herd could be achieved (Table 1). Moreover, reproduction of the theoretical herd would not be checked, for one buck can breed about 15 does.

Table 1.

Year	Mature Bucks	Yearling Bucks	Mature Does	Yearling Does	Fawns	Total Deer	MAX. HARVEST No. Bucks	% of Herd
1	20	10	20	10	30	90	20	22
2	10	15	30	15	45	115	10	9
3	15	23	45	22	67	172	15	9
4	23	34	67	33	100	257	23	9
5	34	50	100	50	150	384	34	9
6	50	75	150	75	225	575	50	9

With a bucks-only season, a maximum sustained harvest of nine percent is possible if all but yearling and fawn bucks are killed each year. If yearling bucks also are taken, a maximum of 12.5 percent could be sustained. Neither theoretical situation could ever be expected under normal hunting conditions.

In a healthy deer herd, 100 does can produce 150 fawns per season and, with normal losses, the herd can easily double in number every third year! In such a herd annual increases of 40 percent are not unusual. Practical deer management has demonstrated that, with normal natural losses, 25 to 30 percent of a deer herd can be harvested year after year on a sustained yield basis. Such harvests can be achieved only with either sex deer hunting. The State of Utah estimates that it harvests 26 percent of its deer herd annually; Colorado has estimated as much as 40 percent, Montana 33 percent, North Dakota 39 percent. Massachusetts has hunted either sex deer since 1910. They estimate an annual harvest of 25 percent, and have had no diseases and no die-offs. The small state of New Hampshire has never had a bucks-only season. Accurate kill records available for 40 years show that an approximately equal number of bucks and does are killed each year. The annual deer harvest continued to increase until it reached a peak of about 13,000 soon after the war and has remained relatively stable since that time.

The Michigan Department of Conservation reported in 1962 that deer herd control was the largest single project in game conservation in that state. The report showed that as many deer are wasted each year as are legally harvested, and indicated that the two chief sources of waste, starvation and illegal kills, could be controlled by full-scale anterless deer hunting.

In his book entitled "Our Wildlife Legacy", Durwood L. Allen, one of the most respected men in the wildlife management profession, wrote:

> "Standing somewhat apart, amid the pulling and hauling over the buck law, a scattering of states, such as Massachusetts, Maine, New Hampshire, Minnesota, and Idaho, never protected does. They harvested deer irrespective of sex, confident in the quality of female venison and aloof to the morality of murdering mothers."

In any fair evaluation of either sex deer hunting, it must be admitted that its effects can be highly beneficial to a deer herd. From a genetics viewpoint, a buck law is essentially selective breeding in reverse. The biggest, most prominently antlered bucks are the most sought after, while small bucks with stunted, difficult-to-see antlers are often mistaken for does and remain in the herd to reproduce more of their kind. All of the does are protected, whether young, or old, fertile or barren, healthy or sickly. Either sex deer hunting tends to remove the inferior, less alert animals from a herd and leave reproduction and available food supply to the healthiest, most alert and best adapted animals. In Pennsylvania, the average deer weight decreased from 150 to 105 pounds in 20 years as a result of overpopulation and bucks-only hunting.

Either sex deer hunting can actually stimulate increased reproduction in a deer herd. In Pennsylvania it was demonstrated that 100 does on good range could produce more huntable bucks than 200 under crowded conditions. Relief from crowding can result not only in increased reproduction and better nutrition, but also in higher survival and more rapid maturation of the young.

This built-in tendency of deer to actually reduce reproductive rates under crowded conditions has also been demonstrated in North Carolina deer. Analysis of doe ovaries from overpopulated range yielded counts of approximately one embroy per adult doe and no fawns of the year were bred. Ovaries from does taken on good range where overpopulation did not exist averaged almost two embroys per adult doe and 10-15 percent of the fawns of the year had bred.

North Carolina has made notable advances in the area of either sex deer hunting since these hunts were first authorized six years ago. A modest beginning of a very short, restricted participation, either sex deer season on a very few areas has cautiously been expanded to include two to six days on almost every management area and numerous locations off of management areas. More and more hunters are accepting either sex deer hunting as good management and are realizing that it will not result in depletion of deer herds and poor hunting for the future. As a result of either sex deer hunting, more deer are being harvested and herds continue to prosper. On some areas herds have been reduced so that they more closely approximate the carrying capacity of the range. But on some overpopulated areas, deliberate attempts to reduce herds by liberal either sex seasons have demonstrated little, if any, herd reduction.

In spite of the progress which has been accomplished in deer management in the state, the public tendency still exists to resist either sex deer hunting in particular areas until overpopulation has done irreparable damage. A most important essential of effective deer management is to prevent overpopulation before it happens, not correct it after it happens. Once overpopulation has occurred, damaged range and unhealthly herds sometimes do not recover for years.

The opposition to either sex deer hunting is natural. The old tradition of the buck law has become firmly established. Conservation-minded hunters have been taught for years that to perpetuate deer hunting for the future one must kill only bucks. Killing a doe has become synonomous with the game law violation, meat hunting or game hog. The concept that it

Trophy bucks, like this one, result from proper management of deer herds. This will likely include the harvest of does.

This may have been the result of overpopulation of a deer range. Starvation and disease mean waste of this resource.

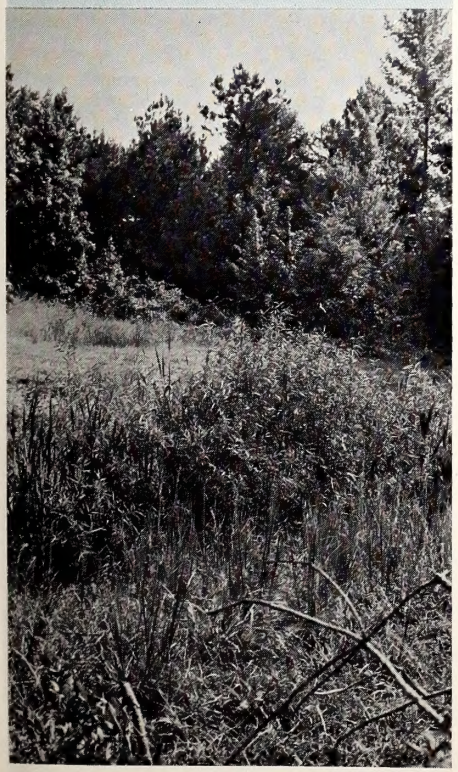
is unsportsmanlike and shamefully simple to kill a doe was generally accepted. The advent of either sex deer hunting naturally gripped most conservation-minded hunters with the old fear of overharvest and destruction of the good deer hunting they had helped to develop. It was natural after so many years of building deer herds to resist any reduction of the deer "stockpile."

Today with actual experience of either sex deer hunting in North Carolina as background, the prospects of relaxed deer hunting regulations are not so terrifying. Those who direly predicted that either sex deer hunting would mean the eradication of deer hunting can view the facts and reconsider. Deer are living animals dependent on an exhaustible food supply and they cannot be stockpiled. Buck-only hunting of well-established deer herds is not in the best conservation interest; and on overpopulated deer range, realistic management requires herd reduction. Under poper management and with either sex deer hunting, a reduced deer herd that is in balance with its food supply can produce a greater harvest than an overpopulated herd, and as a bonus can produce larger deer with better antlers.

It is time for all of us to discard the "sacred doe" and "mother deer" objections to either sex deer hunting and accept the more realistic and proven concepts of advancing deer management in the state. These concepts are becoming as vital to the perpetuation of deer hunting as protection and regulation of hunting have been in the past. With an increasing hunting demand and a full appreciation of the importance of conservation, we must make the best use of all our natural resources. Deer management at the expense of forest management defeats its own purpose. But with proper management we can increase hunting opportunity, reduce waste, control crop damages, and assure forest reproduction and grow two crops where only one grew before.

If we as hunters and wildlife enthusiasts will strive for a fuller appreciation of all the many interests that must be considered in properly balanced deer management, we can in turn expect a more receptive attitude from landowners toward providing more land for deer production and hunting. With cooperative up-to-date management, backed by public support, North Carolina deer herds can continue to expand into new territory, thus furnishing an expanding base of good hunting and an increasing annual kill.

The start of an outdoor adventure is marked by this rugged sign at the entrance of the conservation trail. An unused portion of the school grounds was surveyed and various stations were marked. Common trees, shrubs, and other bits of nature are pointed out. How things live together in wet lands is noted in the cattail area shown below.



Conservation Comes Alive!

by Lunette Barber
Wildlife Education Representative

LOOKING for a conservation project? Looking for a way to create further interest in school subjects? Looking for possibilities to make science (both physical and natural), history, geography, spelling, English, arithmetic, art and crafts more lively? Then establish and **use** a Conservation Trail or the older term, Nature Trail.

The nearness of a thing in Nature makes it more realistic. Any child or adult may sit indoors and read about a thing, look at pictures, study maps, graphs, and charts as long as he wishes. But getting into the out-of-doors to see, touch, feel, hear, and even smell the visible forms of Nature in which he is interested makes Nature a reality and more interesting.

There are many fascinating ways to teach conservation of natural resources—rocks and minerals, soil, water, plants, and wildlife—and at the same time bring a greater appreciation of the ever-nearby features of interest which are often passed unobserved or overlooked. With America falling in line with the President's ORRRC (Outdoor Recreation Resources Review Commission) program, it would be beneficial for the children to be taught more and more about the out-of-doors and its importance to each citizen.

One of the easiest and most enjoyable aids to get the above done is a Conservation Trail. The trail can be a path leading through a designated area with attention directed to specific and important visible forms of nature. A trail is not difficult to establish and label. A variety of places can be surveyed and developed for use, such as local school grounds, city parks, camp sites, retreat areas, community playgrounds, hospital grounds, and so on.

In order for a Conservation Trail at a

school to be a success and beneficial as a teaching aid, the teacher or teachers must be interested, enthusiastic, and eager to use the trail for emphasis in teaching conservation. Possibilities to create further interest in school subjects are unlimited.

Maintenance of the trail requires very little work. The best method for taking care of a trail is **constant** and **good** use of it.

The Forest Hills Garden Club of Garner, composed of energetic and enthusiastic young women, recognized these facts. Eager for a Conservation project in their club work, they decided in the spring of 1963 to undertake and finance the establishment of a Conservation Trail at Vandora Springs Elementary School to be used by any teacher in the school, especially grades four, five and six. With the agreement of the principal, Mr. P. Marshall Long, the approval of the Wake County Superintendent, Mr. Fred Smith, cooperation of the teachers, and the Conservation Committee of the Garden Club the trail was surveyed, the narrow walk cleared, and the trail was finished.

The trail is used constantly. Here are quotes from two teachers: "This is a very educational endeavor. My children get as much from the use of the trail as from anything in the classroom." "My pupils are very enthusiastic about the trail and enjoy it immensely. It is a grand thing to have something of this sort so close that we can visit often without being away from the classroom for long periods. It is truly a wonderful supplement."

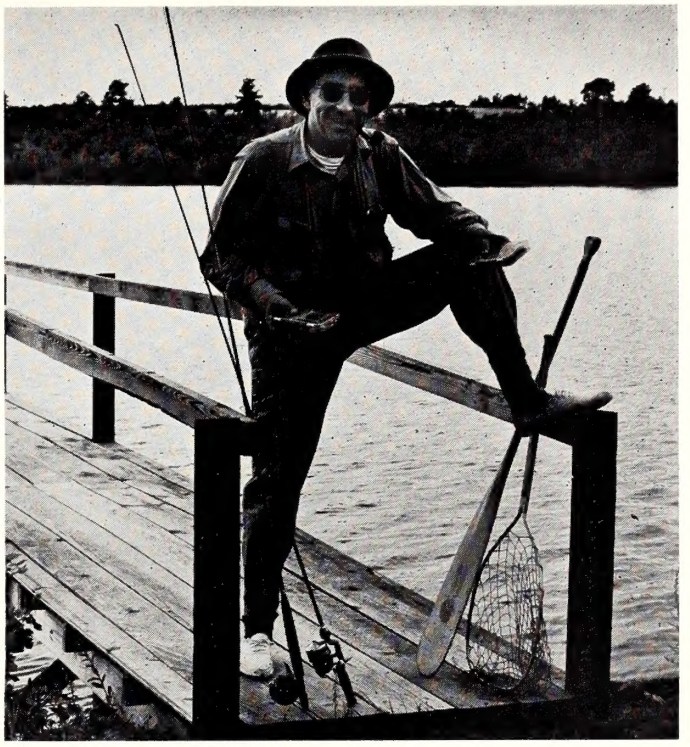
Photos by Duane Raver

Preliminary planning is essential to the success of field mapping and ultimate site marking. An outline map showing the trail and the interest points can be provided the users of the trail. The Vandora Springs project involved several groups represented by the individuals shown at left. Wake County School Superintendent, Fred Smith (at far left); Wildlife Education Representative, Lunette Barber; Garden Clubbers Mrs. E. E. Lambert, Mrs. Milton Gupton; and School Principal, Marshall Long.

EDITOR'S NOTE: A little pamphlet entitled "A Guide to the Trail" which describes the Vandora Springs Conservation Trail is available upon request from the Education Division, Wildlife Commission, Box 2919, Raleigh.

THE FISHERMAN'S CLOTHING

by J. H. Cornell



OUR purpose is to pass along to you a few ideas concerning fisherman's clothing which may be of some help in your own activities. The accompanying photograph illustrates most of these ideas, so let's consider the clothing, starting from the footwear on up.

Shoes made of canvas and rubber are most desirable. Water will harden leather so that leather shoes for fishing purposes have a very short life. Canvas shoes, with non-skid soles, provide a measure of safety in navigating boat decks and docks which may be wet; and they help to prevent an unexpected slip and subsequent dunking in the lake. They are equally suitable for wading when the fishing is being done in a stream or along the lake shore. In wading, of course, the shoes would be laced and tied. In a small boat, however, from which much of your fresh-water fishing will be done, it is an important safety consideration that the shoes shall not be tied.

In small boats, and especially in the excitement of playing a fish, there is always a possibility of the fisherman and the boat parting company. Should that occur, it is important that you be able to kick off the shoes and stay afloat without that added weight. These suggestions apply to pleasure boaters as well as to the boat fisherman.

Next in order comes the socks pulled over the trouser legs. This serves the useful purpose of keeping all sorts of biting insects off exposed shins while you sit in the boat and try to concentrate on catching a fish. There is also the consideration of walking from your car to the stream or to the boat, and frequently through some amounts of vegetation which seems to be the preferred habitat of chiggers. Now chiggers, in order to attack effectively, always crawl upward. With socks over the bottom of the trousers, their upward migrations keep them on the outside instead of the inside of the trousers. Of course, if you are a hardy soul who does not mind chigger bites, or the bites of horseflies and deer flies and mosquitoes, then this sock business is quite immaterial!

The full-length trousers and long sleeves on the shirt come in the same general category. They protect against insect bites, and if your skin spends most of the time in an office, they serve admirably to prevent some very uncomfortable sunburn.

Next in order comes the fishing vest. This is a garment of convenience rather than comfort. Because fishing time is so frequently limited, it is most desirable to have all of the necessary paraphernalia organized and ready to go at a moment's notice. The best vest frequently is the cheapest one available because it will be made of the lightest poplin cloth rather than a heavier, and hence warmer material.

Actually, the vest should be a maximum number of pockets held together by a minimum amount of cloth. It is most desirable to have a vest in which the pockets fit the plastic tackle boxes which are generally available. You can keep your fly rod lures in one set of boxes and your casting lures in another set. Depending on the type of fishing to be pursued on any particular day, it requires but a moment to pick up the appropriate boxes and slip them into the vest. Of course, the pockets for hook disgorger, knife, tackle pliers, and all the rest of the gadgets which seem to be necessary at various times, remain loaded and ready to go at all times. The back pocket may well carry a raincoat as standard equipment, with lunch added as you may desire and the situation warrants.

Polaroid glasses are not a necessity, but in a long day of fishing they can be a great comfort. A long exposure to the sun frequently produces a severe headache from eyestrain. Polaroid glasses are a means of removing this type of discomfort at the source. They also make it possible for the fisherman to see through the sunlight glare on the water surface, as he searches for fish.

Last, but not least important, is the fiber sun-helmet. Because of the ventilation it provides, it is the most comfortable hat to wear on a hot summer day. In addition, it keeps direct sunlight off eyes and glasses and also prevents sunburn on the back of your neck. For the "untanned" this can be an important consideration in the early summer. Likewise, when an unexpected shower arrives and the raincoat is put on, the brim of the helmet not only keeps the rain off the face and glasses, but also prevents a rivulet of raindrops from trickling down inside the raincoat collar. It has never been quite understandable why this should be called a sun-helmet when it provides such excellent protection against rain as well.

The safety aspect of a helmet depends, to some extent, on your choice of fishing companions. Over a long period of years, the situation frequently arises where a friend is taken fishing who may prove to be something less than an expert. Of course, the proper disposition of a sidewinding caster is to drop him gently but firmly over the side of the boat. However, if he happens to be your boss or the father of your current girlfriend, sometimes it is better to wear a helmet and let the free-flying plugs bounce harmlessly off instead of being imbedded in your scalp.

We present these ideas with the hope that one or more of them may contribute to the future safety and comfort of your fishing trips come next season.

NORTH CAROLINA WILDLIFE

RESOURCE-O-GRAM

A ROUNDUP OF THE LATEST WILDLIFE NEWS

1964 Fishing Regulations, Licenses in Effect

The 1964 fresh water fishing regulations have been published and distributed to license dealers throughout the state. Of the same general format as last year's regulations, the new booklets contain additional information such as a complete list by county of the seasons and special devices that may be used to take rough fish and migratory salt water species. The rules also contain a clarification of the definition of private waters in which fishing licenses are not required, plus a list of fishing access areas in operation as of January 1. An important change over last year's regulations is a 12-inch minimum size limit on black bass in Kerr and Gaston Reservoirs.

Persons who have been fishing with state or county fishing licenses are reminded that these expired December 31. Holders of combination hunting and fishing licenses are clear until next July 31.

It is Boat Registration Time

Boat registration renewal notices have been sent out to all persons who operated boats in 1963 under the Motorboat Safety Act of 1961. Commercial fishermen may renew their boat registration certificates without cost by submitting to the Wildlife Resources Commission (1) a signed statement certifying that the boat is a commercial fishing boat as defined in G. S. 75A-5 and (2) a receipt signed by an authorized agent of the North Carolina Department of Conservation and Development, Division of Commercial Fisheries, bearing the number of the boat involved and showing that the commercial fishing license tax imposed by G. S. 113-174.7 has been paid for the period during which the application for renewal is submitted.

WILDLIFE Hits All-time Peak

With the current issue, Wildlife in North Carolina, reached a monthly circulation of 81,500, making it the most widely circulated monthly publication produced in the state and ranks third in the nation for circulation of magazines of this type. At an estimated 5 readers per copy, this makes a total readership of over 400,000 Tarheels each month.

Hunting Seasons Close on Some Species

Effective January 1 the hunting season on deer, bear and wild boar closes. January 4 marks the closing of the season on ducks and coots, while the snipe season closes January 6, the woodcock season on January 11 and the goose season January 15. Most other seasons extend to February 15.

Go Tie a Fly!

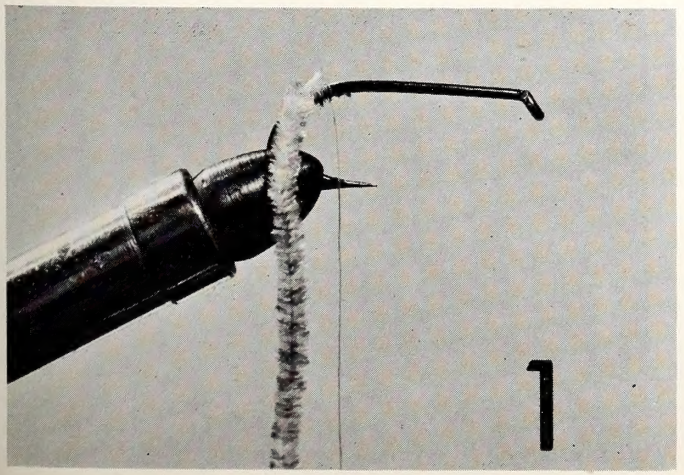
Here is a basic assortment of materials and equipment necessary for streamer making. No doubt you will add to it as your fly-tying horizons broaden. Buy good supplies, as you need them.

Photo Feature by Joel Arrington

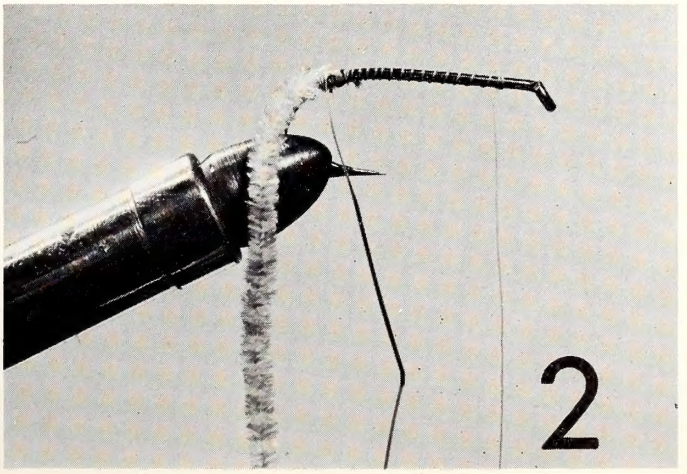
Not many deer are shot with bows and arrows fashioned by the hunter. And the small game shooter relies to a great extent on commercially loaded ammunition and certainly on factory-made fire arms. But the fisherman can construct and devise his own lures, if not his basic tackle. There is an additional thrill and satisfaction in fooling a bass or trout on a fly that you have made. And you will be pleasantly surprised how easy lure-making is.

Of the many variations of fish foolers at your disposal, the streamer should be the most effective on a wide variety of fish, yet one of the easiest to make. The streamer is designed to imitate a small fish darting around the pond or stream. It need not be exact at all and generally, color is unimportant. Lighter colors—white, yellow, orange—with a bit of red or black, work well. Most of the materials used here came from Herter's, Inc., Waseca, Minnesota.

A sharp number 1 hook is placed in the vise and the body material (here, chenille) is securely tied near the base of the hook.

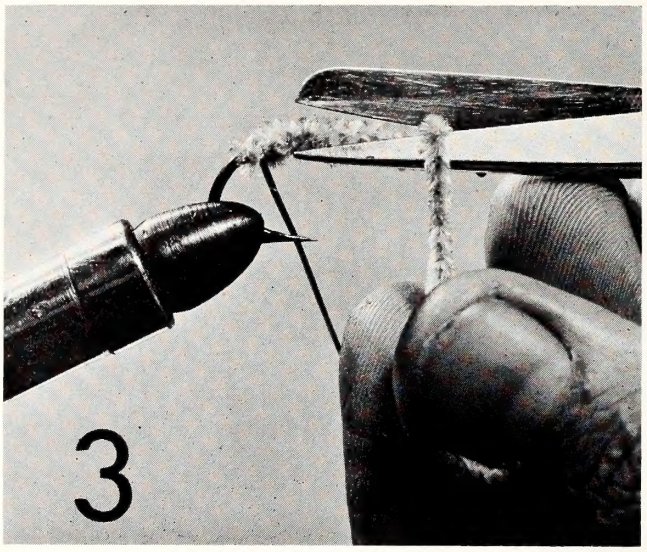


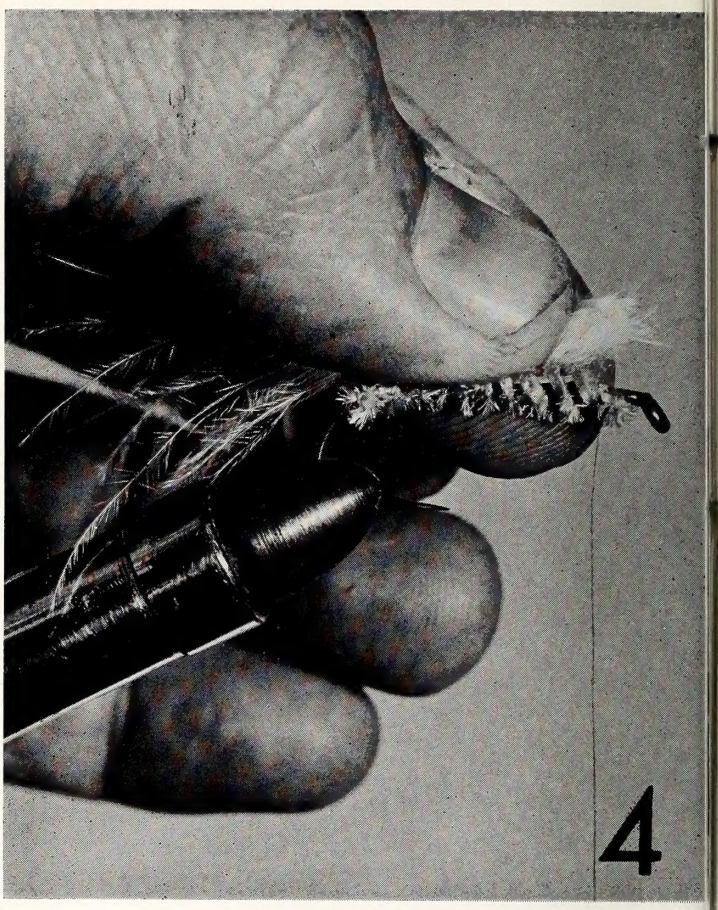
A short length of flat tinsel is tied down at the same point, and the thread (nylon) is then wrapped the length of the hook.



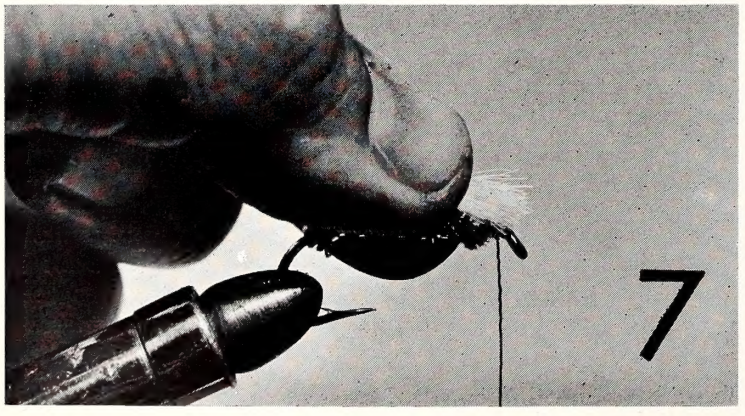
Go Tie a Fly

After securing the thread with a half hitch or two, wrap the body material the full length of the hook. Leave the tinsel in its tied position until the body material is cut.

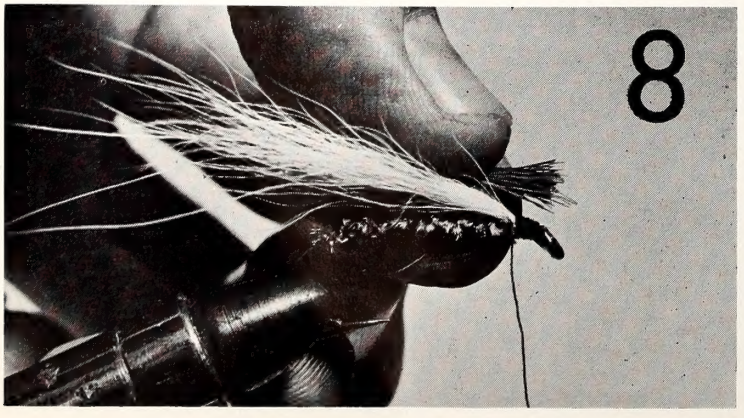


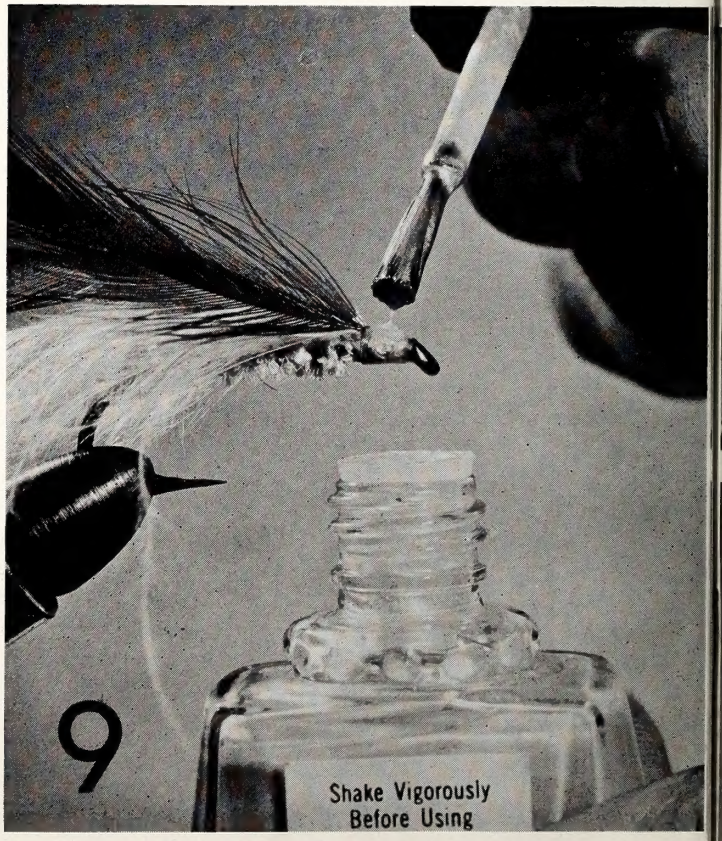


The body material should not be wrapped too close to the eye of the hook. Leave 1/8 inch or better in all cases. The tinsel is wound on over the body material quite tightly and carefully tied down at about the same point as was the body material. This completes the body, and the streamer material is next. Here, we've selected fluffy feathers called maribou, slightly longer than the hook. Tie down a good bunch but do not "overdress" the streamer. Keep it simple.

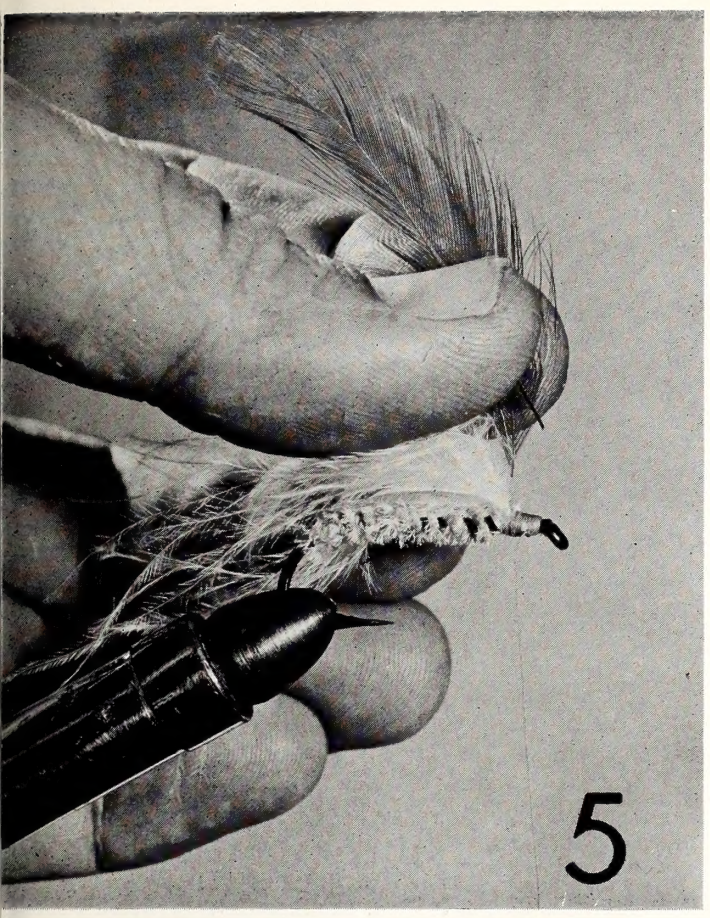


Tie the heavy ends of the hair near the eye of the hook, still being cautious about over-running the hook's eye. A darker bucktail can be placed over the light color (below) for two-toned, minnow-like effect.



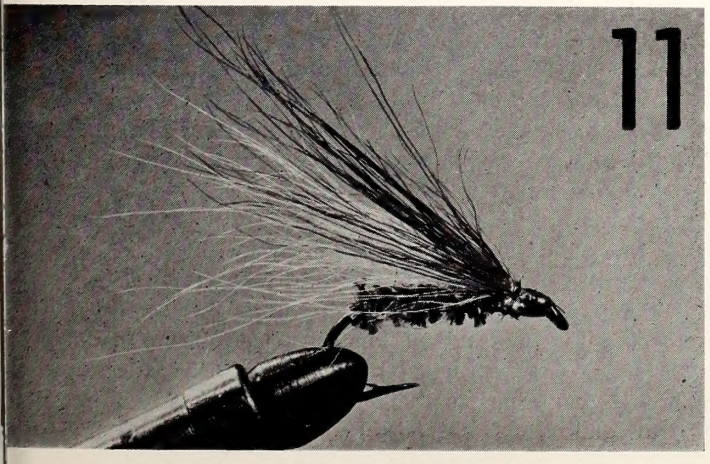


Switching back to the feather streamer completed above, the last step is coating the thread wrapping with fingernail polish or fly-head cement. This adds a spot of color and protects the wrappings.



This next step is certainly optional, but does give the fly a bit of color. Take two or four bright hackle feathers almost twice length of hook and tie them over the maribou.

Now, except for the finishing touches, we have completed a maribou-type streamer. It is not a durable fly, and will not hold up under heavy use; but it's a productive lure. For more wearing qualities let's turn to bucktail. And that is what we're cutting in the above photo. Using the same body as described, snip off a pinch of white bucktail from a deer tail saved from a fall hunt. The longest hair should be slightly longer than the hook and not too "thick." Most streamers look and act better if dressed lightly. Dyed bucktail and arctic fox work well.



At left are the two finished lures ready for use. Once you're on to it, five minutes will see them completed. Cost of materials: not much over a nickel each. Do they work? This bass displays the streamer!

TURKEY

"THEY taste like onions in the spring," said a North Carolina turkey hunter who is "against any spring gobbler season." Another turkey shooter claimed, "We'd lose as many hens as gobblers if turkey hunting is made legal in the spring."

One position taken by sportsmen, wildlife clubs, and quite a few others is that other game species might suffer. "Illegal hunters and poachers could fill the woods during the spring season under the pretense of turkey hunting."

I make no claims to knowing how wild turkeys taste in North Carolina in the spring. Also, it would be impossible for me to predict how Tarheel hunters will react to a legal spring season. However, based on all the information that could be uncovered by Commission biologists, I'm in favor of a spring gobbler season on wild turkeys in North Carolina. Here are some reasons why:

The preponderance of opinions from other state wildlife departments and from renowned turkey experts indicates that a spring gobbler season does not retard the turkey population.

A study completed in 1956 of three states, which at that time had had spring gobbler seasons for a period of 25 years or more, showed the following:

"In Alabama the population jumped from 13,500 birds in 1940 to 46,000 in 1956."

"Mississippi's 1940 population was given at 5,000 birds and their 1955 population had jumped to 15,000."

"In Arkansas the 1940 turkey population was given at 7,000 birds and 7,000 were still present in 1955."

Other states which have never had a spring season are not able to show any better record of wild turkey populations. North Carolina's estimated population of 15,000 birds in 1950 has shown no significant increase to the present. Some contend our turkey population is decreasing, except on state-managed refuges and some military reservations.

While the evidence does not necessarily identify the factors limiting turkey populations in North Carolina, it does offer convincing proof that legal spring hunting would **not** hurt this resource.

A recent letter from the Alabama Department of Conservation gave the following merits of such a season:

"It provides hunting at a time when other game seasons are usually closed; it permits a harvesting of old adult males that should be reduced in numbers; it permits a harvesting of birds without interfering with maximum population growth; and where maximum protection is desired for the turkey population but still permit some harvesting, it is superior to the fall season because there is no difficulty for the novice turkey hunter to distinguish gobblers from hens."

It was also emphasized that: "There is no evidence whatsoever that there is interference of any significance with turkey nesting and this is indicated by Alabama's expanding turkey population." There were an estimated 62,000 turkeys in Alabama during the fall of 1960.

Other states have recently initiated spring seasons with no apparent adverse effects. Missouri, which permitted no turkey hunting at all for a number of years, has now adopted a spring gobbler season, but no fall season. Virginia, our neighbor state to the north, now has a spring gobbler season in a limited portion of the state. This action has met with encouraging acceptance and success by the sportsmen. Georgia hunters bagged an estimated 1,815 gobblers during their 1962 spring season.

Photos by Jack Dermid

There is no biologically sound reason for not harvesting gobblers during the breeding season. We do it with several species of game. Deer hunting is best during the rutting season. Like the buck deer, a turkey gobbler is polygamous and usually has a harem of five or more hens. According to available information, "if the dominant gobbler is killed another gobbler will take over the duties of servicing the hens, and there is evidence that year-old gobblers are capable of breeding but are prevented from doing so by the old gobblers." Based on slides with domestic turkeys, it is also believed that only one service is needed to fertilize the entire clutch of eggs.

As for disturbing the nests, a survey of 102 experienced turkey hunters in Alabama showed only ten known occasions when hens were flushed from their nests during spring hunts. Since this group possessed an average of 21.9 years of turkey hunting experience, this means that only one nesting hen was frightened from her nest for each combined 223.4 years of hunting.

According to some turkey hunters, the gobbler is the worst enemy of the expectant mother turkey. They report that the old tom seems to think it requires more than one mating to fertilize a clutch and they do not hestiate to tread

TALK

by George E. Burdick
Wildlife Biologist

The bagging of a gobbler like the one shown in the far left photo is a real thrill. The successful management of this noble bird is challenging. A hen protects her nest deep in a tangle of vines. The male bird is actually a potential enemy at this time. A spring season might help.

the nesting hen. This usually results in breaking most of the eggs. Thus, a spring gobbler season would help to reduce this type of loss and actually increase the population, reasons this group of hunters.

Biologists of the North Carolina Wildlife Resources Commission are confident in recommending a spring gobbler season in preference to the traditional fall season. It seems to me to be one way of "having your cake and eating it too."

One concerned hunter asked, "If you want to do something for turkeys, why don't you just close the season?" This would undoubtedly help our turkeys, if we could eliminate those selfish individuals who hunt out of season.

A West Virginia turkey expert believes poaching or illegal hunting is probably the most serious cause of sparse turkey populations in many areas. I'm prone to agree with this appraisal that illegal hunting takes a heavy toll of North Carolina turkeys—both hens and gobblers—at all seasons.

How to control humans who are bent on shooting every turkey that comes within range and how to stop those who purposely use bait and other illegal means for killing turkeys are problems that will have to be solved. The Wildlife Resources Commission certainly needs the assistance of every interested sportsman in curbing poachers. It is the general concensus of opinion that we could support many more turkeys than are now present in North Carolina if we could more effectively control this undesirable human element. We could thus allow legal hunters to reap a greater harvest of the turkeys.

The newly-aroused interest in wild turkeys in North Carolina is showing signs of progress. There is now a $100 fine for illegally taking a turkey. (One enthused turkey-lover said it should be "12 months in jail.") Indicative of the interest in turkeys, we now have a full-time turkey biologist with the Commission.

As more concentrated effort is directed toward doing something for the wild turkey, there seems to me to be one aspect of the problem which is very difficult to solve: namely, insufficient responsibility on the part of the general public. To effectively manage a species, we need to be able to depend on conservation-minded hunters who will follow the rules of the game and recognize the basic biological factors involved.

Understanding the reasons and logic behind our proposals is not always easy for those unfamiliar with scientific jargon. This point was brought home to me recently while talking with a grizzled oldtimer about the pros and cons of spring seasons.

He first wanted to know how many wild turkeys I had ever killed. I informed him I'd killed three turkeys and had been within a few yards of dozens more while attempting to trap the suspicious critters.

He still didn't seem completely convinced that I wasn't just a "bookworm biologist", so I told him about my participation in spring gobbler counts every year on several of our refuges. As my elderly friend began showing some acceptance of my knowledge of the bird, I added more frosting to the cake by informing him of turkey flocks I had observed while living in Oklahoma and Texas.

Then as a clincher, I related to him my experience on the Camp Lejeune military reservation when I stalked a bobcat for almost half a mile and got within 20 feet of it. The bobcat was so intent on catching a turkey, it didn't see me until I yelled at it in order to get a frontal picture.

Now my friend seem to accept me not just as a "bookworm biologist" but as one who got out in the woods occasionally. This gave me the opportunity to explain the advantages of a spring gobbler season as a fellow turkey hunting "expert" rather than one who hunts vicariously by reading outdoor magazines.

After about two more minutes of talking, however, my fellow "expert" stopped me and said, "Jest give me plain turkey talk and leave out all those numbers from other states."

I started again. "Turkeys will not commit suicide, right?"

"Never seed one do it."

"O. K.; if we shoot only the gobblers we should have more and more hens."

"Unless sumpin' else ketches 'em, like bobcat."

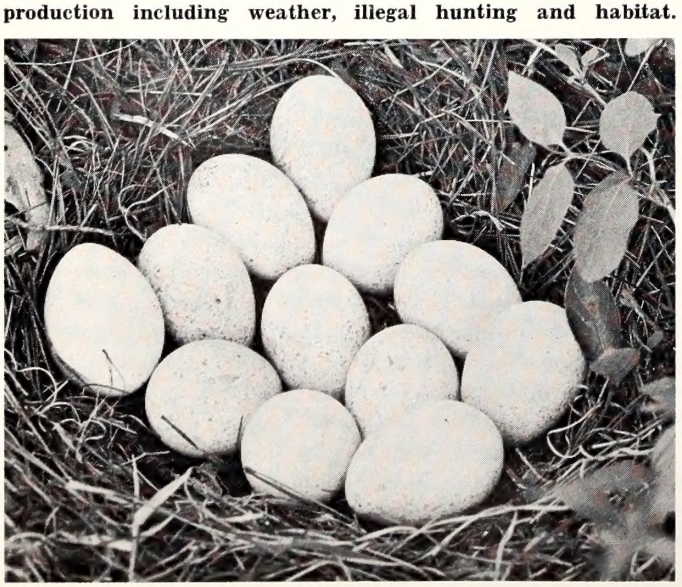
"Bobcats don't seem to bother them too much. Where we have the most turkeys in North Carolina, we also have bobcats. Anyway, if we could have more hens it should mean more eggs and therefore more turkeys," I offered.

"Cept when river water floods the nests."

"We can tell the gobblers more easily in the spring."

"A man that can't tell gobblers ought not to be shooting turkeys anyhow. Don't you aim to ever kill hens? We kill hen quail, otherwise they would jest go to waste."

More eggs, more turkeys, more eggs. How to step up this sequence is a puzzling problem and one that won't be solved by emotional fist-thumping. Many factors influence wild turkey production including weather, illegal hunting and habitat.



"After we build the turkey numbers up, we probably should shoot a few hens during a fall either sex season," I told him.

"H'mm," he murmured thoughtfully, "I've got one important question."

"What's that?" I said, feeling good that he was asking me a question now.

"How do you get that wild onion taste outa summer toms?"

This newly-hatched wild turkey is already pretty well able to take care of himself. What his fate from here on out will be is uncertain at best. Could be that he will be harvested during a spring gobbler season. Biologists say it's practical.

"You don't want to get it out", I joked, "that's like getting your collards already salted."

"I'd jest as soon shoot a buzzard as a turkey I can't eat," he retorted.

"By the way," I recalled, "I do remember the answer to that question. It comes from a South Carolina hunter. He said that only a fraction of the toms he'd killed in the spring had an onion flavor and that there were two ways to overcome it: (1) put onion in the dressing or (2) put a dish of spring onions on the table or try sliced sweet onions as a salad. And by the way," I said, "How come you know so much about how gobblers taste in the spring?"

So went the talk about turkeys in North Carolina. Many questions cannot be answered by the Commission because we've never had a legal spring gobbler season.

But I would like to quote an invitation received in a letter from Mr. Wayne P. Colin, Assistant Chief, Pittman—Robertson Section, Alabama Department of Conservation.

Mr. Colin wrote, "I suggest that you have some of your leading opponents to a spring season visit and hunt in a state that has a spring season. This will convince them quicker than anything I know of as to the merits of spring hunting."

Another First For North Carolina

by Buford Tatum*

1st Vice-President,
N. C. Field Trial Association

Photos by Robert Humphries

INTEREST and enthusiasm are high in anticipation of the thirteenth running of the National Amateur Shooting Dog Championship. The trial which will be held on the Sandhills Wildlife Management Area near Hoffman, North Carolina, beginning January 16, 1964, is one of the highlights of the season and is expected to be one of the best field trials ever to be held in the Tarheel state.

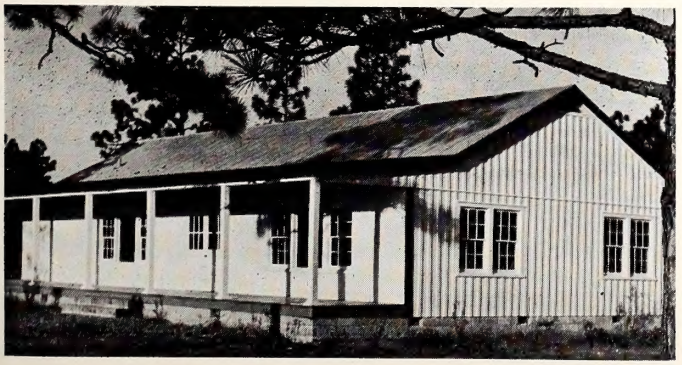
Although North Carolina is fortunate to be host to such an event, it has plenty to offer both local and visiting field trialers—Southern hospitality, beautiful country, exhilarating climate, and, last but not least, the field-trial facilities and grounds which are second to none.

Few sportsmen realize the tremendous job the North Carolina Wildlife Resources Commission has done in providing these "custom made" grounds carved out of the land of the longleaf pine in the Sandhills region of North Carolina. The 55,000 acre Sandhills Wildlife Management Area is devoted to multi-purpose game and fish management plus outdoor recreation. Most of the area is open, by permit, to small game hunting, deer hunting, and fishing. Some of the lakes are used for swimming, and there is provision for limited camping in conjunction with the hunts.

An intensive forest management program produces about three million board feet of timber and several hundred cords of pulpwood each year. Most of the planting materials used for small game habitat improvement, which are distributed free of charge to sportsmen across the state, also are produced here. During the first half of the current dove season, the area provided 15,000 doves for 2,500 gunners for an average bag of six birds each. Many deer, quail, and rabbits also are taken annually on the area. Nine lakes provide bass and bluegill fishing for several hundred followers of Isaac Walton.

Out of the total of 55,000 acres, approximately 14,000 acres have been set aside for field trials. On this same 14,000 acres, fishing, deer and dove hunting are permitted. The field trial facilities and grounds are available not only to bird dog field-trial activities but also to coon dog field trials or any other related activity appropriate to the area.

This is the club house on the field trial section of the Sandhills area. It is a center of activities for field trial events.



The facilities provided by the Wildlife Commission consist of a club house, a horse barn that can house 44 horses, and kennels for at least 88 dogs. Development plans call for spacing water holes at half-mile intervals along the entire length of the course. It is expected that the last of these will be completed before the Championship is run. The water holes help hold quail on the course and furnish the dogs with suitable places to drink.

The horse barn, with facilities for 44 horses, is near the club house. The attached dog kennels can accommodate over 80 dogs. Pictured below is one of the many proposed water holes.

The grounds consist of seven, one-hour heats, arranged to comprise a continuous 31-mile circuit, cut through pine and blackjack woods. In addition to quail, the food supplies on the course are utilized by dove, turkey, and deer. Great improvements have been made to the course over the past years and these improvements will be expanded in accordance with a long-range plan of development aimed at maximum production and use. The North Carolina Field Trial Association has worked closely with the North Carolina Wildlife Resources Commission in striving to improve the

*Mr. Tatum is Supervisor of Fish Management in the Wildlife Commission's Division of Inland Fisheries.

North Carolina State Library
Raleigh

field-trial grounds. The table below gives the present development of the courses.

Average length of heats	4½ miles
Acreage in fallow fields	150 acres
Acreage planted to perennials	252 acres
Acreage planted to annuals	135 acres
Total acreage in planted and fallow fields	537 acres
Controlled burning, 1961-1962	5,040 acres
Controlled burning, 1962-1963	4,530 acres
Controlled burning, 1963-1964	3,750 acres
Total in 3-year rotation	13,320 acres

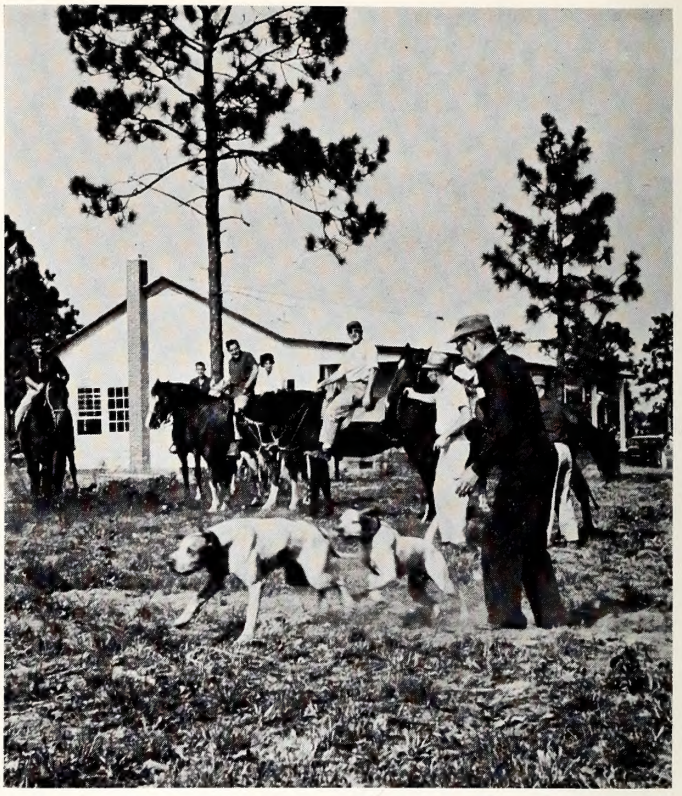
Many sportsmen will probably raise a questioning eye at the listing of controlled burning* as a field trial course development activity. Actually, it is the most practical of all practices in this type of cover in terms of the cost-benefit ratio. Light "controlled burning" of sandhills vegetation (as opposed to the all-consuming uncontrolled "wildfire") on a three-year rotation has several beneficial effects contributing to improved production of both timber and wildlife. For timber, it reduces the incidence of disease and increases the rate of pine regeneration. Also it prevents the accumulation of "rough" (dead vegetation) and thus reduces the hazard of wildfire which destroys wildlife and timber-sized trees.

For wildlife, controlled burning greatly increases growth of such wild legumes as partridge pea and beggar's lice. These, of course, are very important quail foods. It also reduces the density of wiregrass which harbors cotton rats that compete with quail for food and may actually feed on quail eggs. Thus, controlled burning contributes materially to the number of birds produced on the field trial course.

To win the National Amateur Shooting Dog Championship is one of the greatest honors bestowed on man or dog. To qualify, a dog must have a win in an amateur stake recognized by the Amateur Field Trial Clubs of America, Inc.

Present officers of this national organization are as follows: President, Harry H. Townsend, New Haven, Connecticut; 1st Vice-President, Dr. G. E. Oehler, Springfield, Illinois; 2nd Vice-President, Harold H. Crane, Port Republic, Maryland; 3rd Vice-President, Norman J. Ellis, Birmingham, Michigan; Secretary-Treasurer, Miss Leslie Anderson, Herando, Mississippi.

Judges for the Thirteenth National Amateur Shooting Dog Championship are James W. Tufts, Pinehurst, North Carolina, and Dr. C. E. Stokely, San Antonio, Texas. Both men



And away they go! Enthusiasm is high on the parts of both dogs and handlers as the day's runs begin. Ahead is good bird cover and well-managed courses. Now it's up to the dogs.

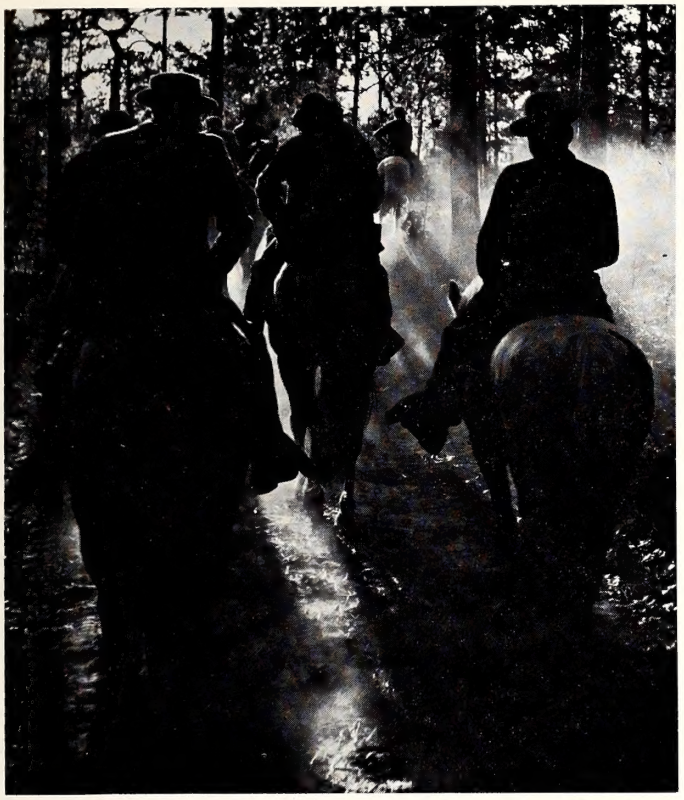
are well-known sportsmen and famous in their own right for their ability to judge a "class bird dog." Dr. Stokely has ridden the judicial saddle in eight of the twelve runnings of this stake. The field trial committee was fortunate to obtain such experienced men as judges.

The inaugural running of the National Amateur Shooting Dog Championship was at Hernando, Mississippi, in January, 1952. There were 44 entries, which still stands as a record for the stake. However, we are expecting this record to be broken when the trial is run in North Carolina this month. Be-

*Since controlled burning has so many benefits and since the cost per-acre is so low, it is the most important management tool on the area. Those who would use this practice on their own land, however, should be warned that it requires great skill and a full complement of manpower and machinery. This is a job for the expert and should not be undertaken without trained personnel.

Potato Patch Sue—A. H. Nitchman, Cranbury, New Jersey

Seairup—Dr. G. E. Pehler, Springfield, Illinois



Late afternoon rays slant through the haze as the riders head for the barn. Some of the bounce has gone from the horses' steps, and shoulders sag a bit. Tomorrow? That's another day.

low is a list of previous winners in this all-important event.

1952	44 entries	**Winner:** Spitball, M. B. Wallace, St. Louis, Missouri. **Runner-up:** Texas Village Lady, Perry Gray, Hillsdale, Michigan.
1953	40 entries	**Winner:** Bills' Oklahoma King, Herschel Brown, Oklahoma City, Oklahoma.
1954	24 entries	**Winner:** Retinoscope, Anthony Imbesi, Estell Manor, New Jersey. **Runner-up:** Seaview Village Troy, Perry Gray, Hillsdale, Michigan.
1955	34 entries	**Winner:** Timilee, Hal M. Horton, Oklahoma City, Oklahoma.
1956	40 entries	**Winner:** Jerry M. Zev, Claiborne Kinnard, Franklin, Tennessee.
1957	39 entries	**Winner:** Tyson's Skyhill Flash, Richard Papa, Toronto, Canada. **Runner-up:** Oklahoma Smokey Joe, A. M. Frierson, Bristow, Oklahoma.
1958	38 entries	**Winner:** Mighty Little Willie, Perry Gray, Hillsdale, Michigan. **Runner-up:** Judge Tom M, Bill Lavin, Girard, Ohio.
1959	27 entries	**Winner:** Santee Sam, R. P. Skinner, Sumter, South Carolina. **Runner-up:** Blue Ridge Prospect, J. R. Soda, Niles, Ohio.
1960	40 entries	**Winner:** Just Rite Roz, R. R. Waugh, Peoria, Illinois. **Runner-up:** Ante Up, John O'Neall, Jr., Knoxville, Tennessee.
1961	39 entries	**Winner:** Warhoop Jake II, John O'Neall, Jr., Knoxville, Tennessee.
1962	26 entries	**Winner:** Jack's Delivery Joe, J. P. Kennedy, Madisonville Tennessee. **Runner-up:** Seairup, Dr. G. E. Oehler, Springfield, Springfield, Illinois.
1963	28 entries	**Winner:** Warhoop Paladin, W. R. Johnson, Rossville, Tennessee.

Sportsmen and their dogs from all over the United States will come to North Carolina and try their skill at winning the honors attached to the National Amateur Shooting Dog Championship. Many owners of famous dogs have already let it be known that they will be fighting for this year's championship.

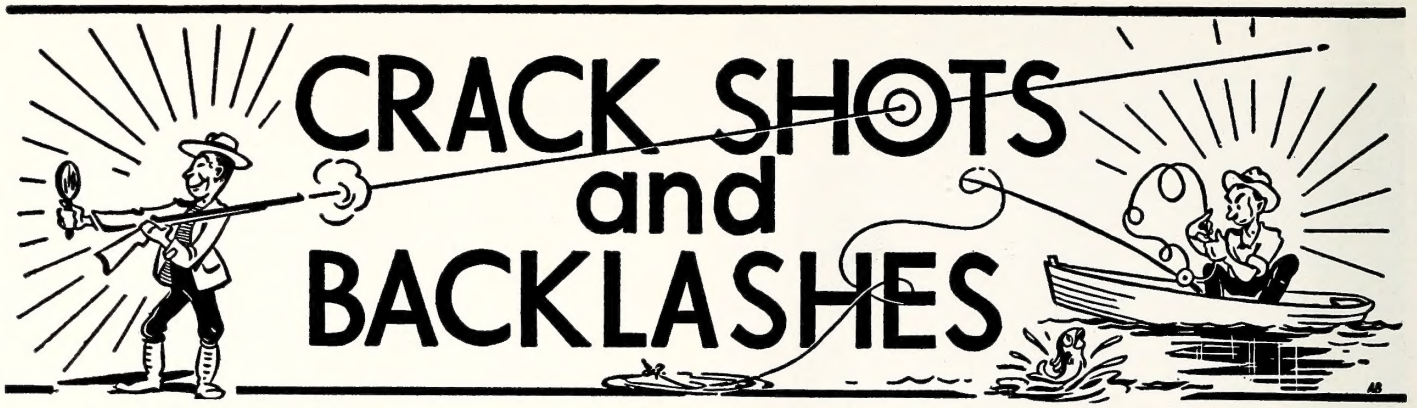
Headquarters for out-of-town guests will be at the Village Motel, Rockingham, North Carolina. The drawing for bracemates and order of running will be held at Holiday Restaurant,, Rockingham, North Carolina, at 8:00 p.m. on Jan. uary 15th.

The benefits accruing to North Carolina from field trials are not limited to recreation alone. It is true that hundreds of sportsmen receive much pleasure and enjoyment in running and watching the dogs. Breeders and sportsmen also have a chance to select the best dogs for use in their programs designed to develop improved hunting characteristics. Perhaps more significant to the boosters of Tarheelia is the fact that last year over $200,000 was spent in North Carolina by bird-dog field trialers in pursuit of their sport. This is a large sum of money and goes a long ways in bolstering the economy of the area.

So, in summary, we can say that field trials provide sport and relaxation for many people, and also constitute one more big business in the truest sense of the word.

McCaskill's Mr. Ranger—L. F. McCaskill, Jr., Rockingham, N. C.

Warhoop Jake III—John O'Neall, Jr., Knoxville, Tennessee



DEPARTMENT OF LETTERS TO THE EDITORS, FIELD NOTES, AND ITEMS OF INTEREST

Conducted By Rod Amundson

"Americans have always valued the outdoors both for its beauty and as a place to hunt, fish, swim, tour, or engage in a multitude of other leisure activities. Unless we take the proper steps, however, our children will lack the outdoor facilities we take for granted. All of us—public officials, community leaders, or citizens—should consider what action needs to be taken to provide facilities for outdoor activities and to preserve our country's heritage of natural beauty."

The foregoing is quoted from a pamphlet (No. 6) entitled "Decisions for Progress" prepared by the staff of the Agricultural Policy Institute, N. C. State, Raleigh, North Carolina.

The pamphlet brings forth some startling disclosures regarding Tarheels, other Americans, and their pursuit of outdoor recreation. For example, the pamphlet (quoting from and leaning heavily on a 1962 report of the federal Outdoor Recreation Resources Review Commission) points out that in 1960 Americans made something like 800,000,000 trips in their automobiles in the category of "Driving for Pleasure." These car rides come under the classification of outdoor recreation. So does swimming. During the same period there were about 700,000,000 voluntary or involuntary dunkings in assorted outdoor swimming pools, farm ponds, lakes, rivers and ocean beaches. In the ORRRC report, walking for pleasure ranks a little below swimming, and pleasure walking is followed by outdoor games or sports, sight-seeing and picnicking. Ranked just below picnicking is fishing. The Report indicates that there were more picnics in 1960 than there were fishing trips. In incidence of occurrence, the report ranks hunting below nature-walking and just above camping.

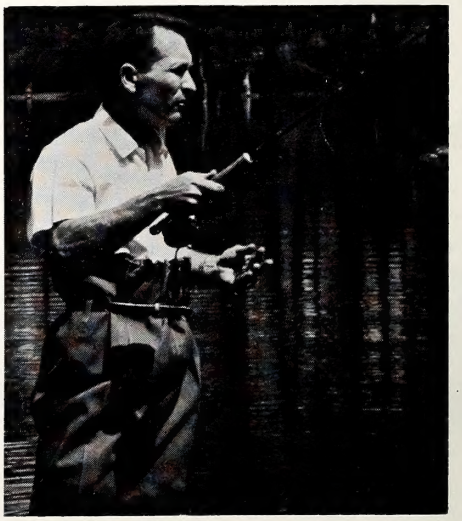
There is no question that outdoor recreation is becoming an increasingly significant American activity. Further, there can be little doubt that planning for outdoor recreational activities must be given closer attention by all concerned individuals and agencies from the local community to the national level.

There has been widespread recognition of the need for planning for the future of outdoor recreation only during the past few years. There have been bills in Congress to provide for more outdoor recreation, and the new Federal Bureau of Outdoor Recreation has been established for the purpose of making possible a coordination among federal, state and local agencies to make provisions for present and future generations of Americans.

But the idea of making plans and provisions for a growing outdoor need is not a new one. As early as 1921 sportsmen and wildlife conservationists became acutely aware of the shrinking waterfowl habitat. They began a national wildlife refuge program that now includes nearly 300 refuges for waterfowl as well as rare or endangered species. These refuges include about 29,000,000 acres of land. In North Carolina some 860,000 acres of land are set aside as wildlife management areas on land either state-owned or managed cooperatively with the federal government. Hundreds of thousands of acres of private land have been developed for small game hunting.

It is pleasing to report that for the most part hunters and fishermen have paid their own way in establishing permanent lands on which people may hunt and fish and otherwise enjoy the outdoors in perpetuity. They have paid their way through the purchase of licenses, duck stamps, and excise taxes on hunting and sport-fishing equipment.

How provisions for financing the future of other forms of outdoor recreation will be made is a matter for community, state and federal consideration. Meanwhile



The future of outdoor sports, including fishing, depends on good planning.

hunters and fishermen and pleasure boaters (who help finance boating access areas facilities) have been footing their own bills for years. They are hoping that fees they are already paying will

not be diverted to the benefit of hikers or campers or bird watchers, and that they will not be called to pay additional fees to subsidize other of the many forms of outdoor recreation.

The pamphlet referred to closes with this thought-provoking statement:

"The issues discussed here are problems which only rich nations face. Few countries in history—and America only recently—have had to consider how leisure time should be spent. Because this is a new problem there is danger that we will neglect the chance to provide open space and recreation opportunities for both present and future citizens. At present it is relatively cheap and easy to ensure that the outdoors remains a part of the American heritage. If we neglect the present opportunities we may find it very difficult, if not impossible, to preserve the beauty of our natural resources and to develop outdoor recreation facilities. Every citizen should make it his duty to ensure that proper action is taken now so we will continue to enjoy our outdoors."

Squirrel Comment

DEAR SIRS: The boy that killed 70 squirrels doesn't worry me; but as I see it what are we going to feed the ones left? When I was a boy we had chestnuts and if you could find the squirrels' hiding places you could get a peck of nuts to sit around the fireplace and eat raw or roast them in the ashes.

Now the chestnut is gone and if something isn't done the hickory nut will go too.

When I was growing up you would be getting pretty tired of red eye gravy and sow belly, and squirrels tasted mighty good.

Grandfather reared me in the mountains of Virginia, and if I didn't get 20 squirrels with a box of shells I would have to get up and milk and feed instead of going hunting. I hunted with a double-barrel Remington and a .22 WRF 1890 model Winchester rifle, but I lost too many crippled by rifle. Have made some long shots both with squirrels and groundhogs with the above rifle. Can you tell me if this rifle is still being made or what took its place; I would like to hear a bullet hit another groundhog.

Thanks for good reading in Wildlife. M. H. BELL, SALISBURY.

As far as we can determine, the 1890 Winchester is no longer manufactured although the .22 WRF cartridge (Remington Special) is available. The center fire .222's probably have taken its place.—Ed.

Fire Two!!

DEAR SIRS: The other day I happened to get hold of the article Mr. Butcher wrote on why he doesn't hunt from a friend of mine, also from North Carolina.

On the majority I find nothing to get my dandruff up over except a few sentences which really get my goat.

The first one that got me was where he wrote "wildlife is vanishing because of shooting and because of the loss of wild land habitat." The first part of this sentence really gets me. In more than one place it has become necessary to open mixed and longer seasons to keep the animals from starving during the winter.

I have hunted for years and I have yet to know of a person who would deliberately wound an animal and watch it die. I have wounded an animal many times and when I did, I immediately put it out of its suffering, and so would anybody else I know.

He also states that a person hardened to the above experience invariably loses respect for life. That is a lot of bunk! I'll be darned if I've lost any of my respect of or for life.

He states that you can get meat cheaper at the store. This also is a lot of hot air. A dollar's worth of ammunition will kill enough venison to last you all year, and at the store a dollar wouldn't even buy a pound of liver. Perhaps Mr. Butcher is trying to drum up some business for the meat packers.

In the last paragraph he asks what motivates the hunter. He answers himself by stating that perhaps killing bolsters a down trodden ego or eases a sense of inferiority. This statement deserves one big horse laugh. I'll be doggoned if I have a down trodden ego or a sense of inferiority. DAN GREENLEE, GEORGIA MILITARY ACADEMY, COLLEGE PARK, GA.

DEAR SIRS: I have just read the October issue of Wildlife and think it is a fine magazine. I especially like the article "Why I Hunt," by Roger M. Latham. I think he expressed some very good reasons for hunting. I like to hunt very much, and I do as often as I can.

However, the article, "Why I Do Not Hunt," was written, I believe, by some kind of nut. I realize some people do not like to hunt, but to say it is morally wrong is just plain hog wash. It makes one wonder what the author, Mr. Butcher, uses for his moral standard or guide. To claim hunting makes a man lose respect for life is in my opinion insane.

Perhaps Mr. Butcher should become a vegetarian, or better yet, he should not eat anything at all because some animal would be deprived of food by his immoral appetite.

I will even suggest that perhaps he should move to India so he can better worship the "Holy Cows."

Again, I would like to say that I enjoy your magazine very much and I am glad you have printed the article by Mr. Butcher so the gunner will be awakened to the type of movement that is going on in this country, not only to stop people from hunting, but to totally disarm the American Public. BERL B. RESPESS, PANTEGO.

Wants More Salty Fishing

DEAR SIRS: For quite a number of years I have subscribed to Wildlife In North Carolina.

You never advised me that it was time to renew my subscription. The sad part is that I never missed it until now.

I subscribe to Florida Wildlife, Texas Wildlife and Maine's Magazine. I guess the reason is that they always have some articles on fishing written for a fisherman.

Your articles deal with fish management, statistics, forestry, and a lot of self praise for the work you are doing and the men responsible.

I fish the Outer Banks every year, often two and three times a year, for channel bass and puppy drum. I think your State has the best surf fishing to be found anywhere. If you had articles on the spotted trout fishing, rock fish (striped bass), largemouth black bass in brackish water, etc., then your magazine would be a must for salt water fishermen.

In any event, please renew my subscription for two years. S. ARTHUR LOVE, JR., NORWOOD, PA.

Speaking of salty fishing, Capt. Lonnie Burris took this 15-foot sawfish in a shrimp trawl, off Carolina Beach in June.

Paul Winner

KNOW YOUR PROTECTOR

Steve W. Morrison

Wildlife Protector Steve W. Morrison, stationed in Transylvania County, was born on June 12, 1938. His parents are Mr. and Mrs. Mott Morrison of China Grove, North Carolina. A graduate of China Grove High School, Morrison was employed at Douglas Aircraft Company in Charlotte prior to his employment with the Wildlife Resources Commission.

Mr. Morrison completed the Pre-Service Training School for Wildlife Protectors at the Institute of Government in Chapel Hill in 1960. He was employed in April, 1961 as Wildlife Protector Trainee and assigned to Henderson County as Wildlife Protector and transferred to Transylvania County in May, 1962. Since his initial employment he has completed five in-service training schools.

Morrison is a member of the Southeastern Association of Game and Fish Commissioners, Law Enforcement Section, and is a member of the Brevard Junior Chamber of Commerce. He is married to the former Freda J. Ford of Kannapolis, and they have two children, Trent Alan, age 4 and Tamra Jan, age 1. The Morrison's reside in Brevard and are members of the Davidson River Presbyterian Church.

DIVISION ENFORCEMENT RECORD FOR SEPTEMBER

HUNTING & FISHING:

Persons checked	29,720
Total prosecutions	702
Total convictions	692
Total cases not guilty	3
Total cases nol prossed	6
Total cases dismissed	1
Total fines collected	$2,511.70
Total costs collected	$5,458.50

BOATING:

Boats checked	2,615
Total prosecutions	192
Total convictions	184
Total cases not guilty	2
Total cases nol prossed	6
Total fines collected	$ 388.90
Total costs collected	$1,586.90

All fines and any arrest or witness fees are paid into the school funds of the counties in which the violations occurred, and no part of the fines or costs collected are paid to the North Carolina Wildlife Resources Commission or its personnel.

We Hope So

DEAR SIRS: In your last issue (October) you had a Nature Quiz. I would like for you to continue it in future issues. I enjoy working out the answers. I also think that Wildlife is as interesting to children as it is to grownups. JAMES RAY DAVIS, HIGH POINT—Age 10.

Manns Harbor It Is

DEAR SIRS: I am fascinated by the picture in the above section (enclosed) of Wildlife for November, 1963.

At first glance I was sure I was back at Poplar Branch at 5:00 a.m., getting ready to go bass fishing. The broad gunwales on the boats and the old converted inboard engine and large homemade tiller, plus the extra sheer, looked so much like those I was used to.

However, this must be an old snapshot from the appearance of the barrel in the foreground with the wooden hoops (probably of cherry) the net overhead which looks more like hand operated than haul type and the apparent cedar shakes on the roofs of the building might suggest Chesapeake or Coastal Delaware.

The give-away should be the line of boats in the canal with what are apparently (from my hand lens) large Coast Guard registration numbers. The first three I think are 14P871; 13 468; and 1443?

This is a fascinating game of detection which I would like to see continued in each issue. The only suggestion I have would be to supply the numbers to the Commander, Fifth Coast Guard District, 301 Crawford Street, Portsmouth, Virginia. I am sure he might be able to locate these accurately from the registration numbers

There are few places in the world that I have found more attractive and interesting than coastal North Carolina. A series of "Do You Know This Place" photographs should stimulate great reader interest and might even supply the editor with some fun, in addition to his hard work. ROBERT N. CREADWICK, M.D. PROFESSOR, OBSTETRICS & GYNECOLOGY, DUKE UNIVERSITY — DURHAM.

DEAR SIRS: The picture on page 23, November, 1963, may be at Manns Harbor. I'm pretty sure it is. DR. W. J. SENTER, RALEIGH.

DEAR SIRS: In the November 1963 issue of Wildlife, page 23, photo "Where and When?" I am almost positive this was taken at Manns Harbor, or Croatan Sound. I have asked several men who are familiar with the section and they all say it is Manns Harbor. The barrels in the photo are used to put baited crab line in. Also, one man at Stumpy Point recognized one of the boats as the one he sold to a man at Manns Harbor, several years ago. MRS. GLENN TWIFORD, STUMPY POINT.

DEAR SIRS: The picture on page 23 of this month's (November) Wildlife looks like a canal at Manns Harbor that runs into Croatan Sound. Someone at Manns Harbor could let you know for sure. RUSSELL HOHNSTON, BELHAVEN.

DEAR SIRS: The picture in your November issue is Manns Harbor, west of the bridge. Chick Cradock has his boat moored there. RED MYERS, WINSTON-SALEM.

DEAR SIRS: In guessing as to the identity of the picture on page 23 of your November issue, I could not possibly tell you the photographer or the date, and am not absolutely positive about the location, however, I would like to guess at it. It looks very much like the canal that serves as the entry to the Croatan located at Manns Harbor, N. C., which is on the right before crossing the bridge to Manteo and Nags Head. D. E. SMITH, WINSTON-SALEM.

Few other photos or features in *Wildlife* have received more response than the "Where and When" picture in the November issue. We received several other interesting letters pin-pointing the location (some with detailed maps, present-day photos from the same spot, etc.), and Manns Harbor it most certainly is. Thanks to all the readers who took time to write us about the photo.—Ed.

TIPPER FLINTLOCK
says . . .

"Hunting is
a lot of fun,
sight that bird
but watch that gun!"

THE NATIONAL RIFLE ASSOCIATION teaches shooting safety

Harry G. McPherson receives the N. C. Protector of the Year Award from Wildlife Commission Director Clyde Patton. This citation for outstanding service was awarded by the Law Enforcement Section of the Southeastern Association of Game and Fish Commissioners at its annual meeting in Arkansas last fall.

Possum Recipe?

DEAR SIRS: As a small boy back in Buncombe County, I would sometimes catch an opossum in my rabbit traps "gums."

I can't remember the preparing of them from catch to pot. Last winter I turned three loose, as I could find no one here in my part of Connecticut who knew. I feel sure there are others who would like to know. Can some of our readers help! DUANE CHAMPLAIN, ESSEX, CONNECTICUT.

Out On a Limb??

DEAR SIRS: On the back cover of current (November) Wildlife, are excellent illustrations by Duane Raver of wild turkeys; but tell me, how does Mama get the kids up on that limb? And while you're at it, spread the word to the pulpwood folks about poisoning hardwoods—so a scraggly stand of hardwoods won't make paper bags; they'll still make browse for deer, turkey, or what have you. Must they put all the emphasis on pulpwood? MRS. BOB SIMPSON, MOREHEAD CITY.

We were afraid somebody would ask that! And frankly we're not sure how the pre-flight poults manage it. But certainly hopping from limb to limb might take them up a good ways in selected trees.—Ed.

DEAR SIRS: The lovely scene of the hen turkey hovering her brood on a tree branch on the back of the November Wildlife recalls a similar scene some 59 years ago but still vivid in memory. I was hunting strayed livestock when at early twilight I walked under a pine and fortunately I saw the turkeys an instant before they saw me. A mother turkey who adopted the young of other broods and there were quail-size poults setting in close formation for a yard or more on either side of the mother.

Then they took flight and the air was so full of slightly different size poults that it seemed more like a flight of over sized butterflies.

I estimated there were more than three dozen birds with the one hen. Earlier, a flock of about 10 poults took up residence with our domesticated turkeys. DAVID J. EDWARDS, CALVIN, OKLAHOMA.

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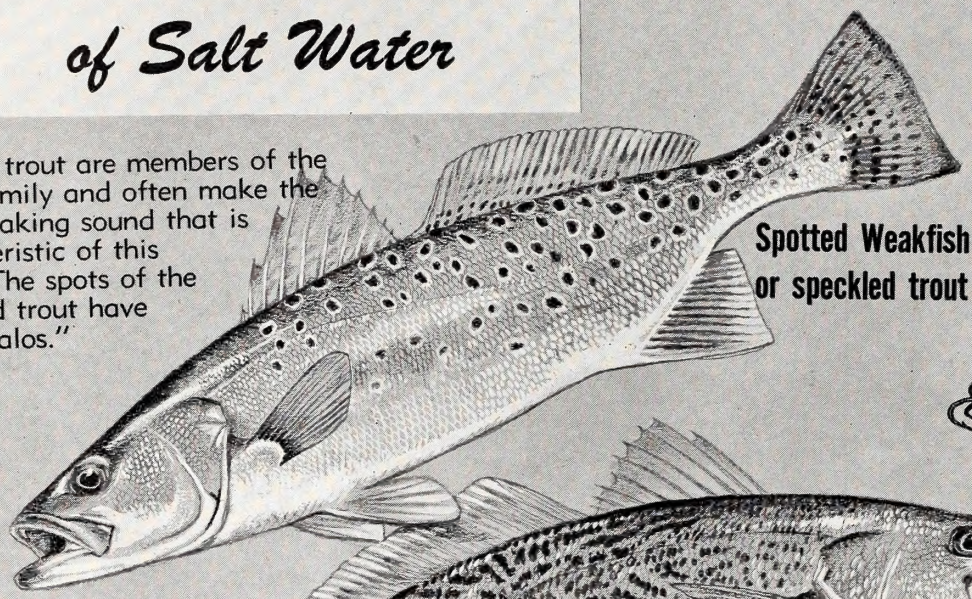
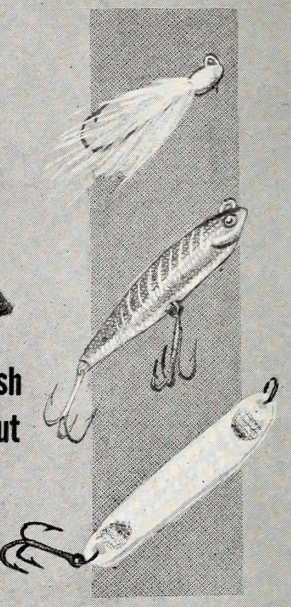
TROUT

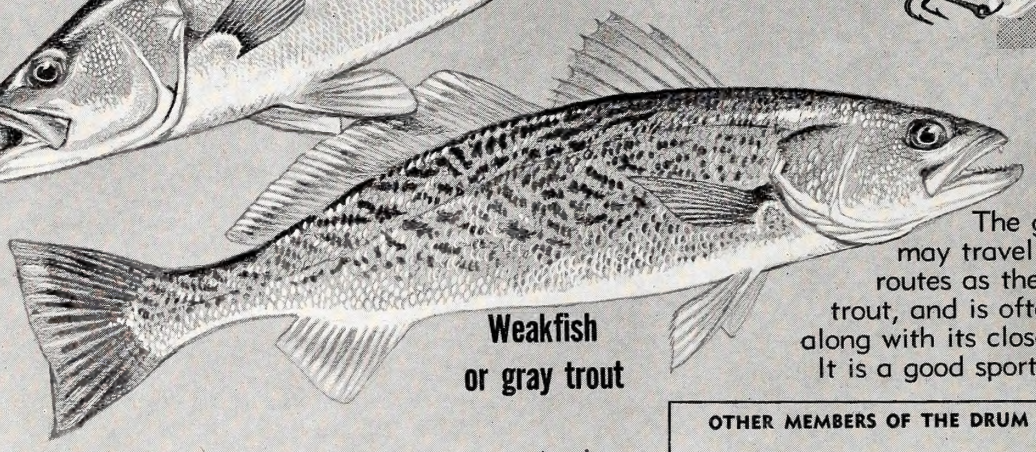
of Salt Water

The sea trout are members of the drum family and often make the soft, croaking sound that is characteristic of this group. The spots of the speckled trout have light "halos."



Spotted Weakfish or speckled trout

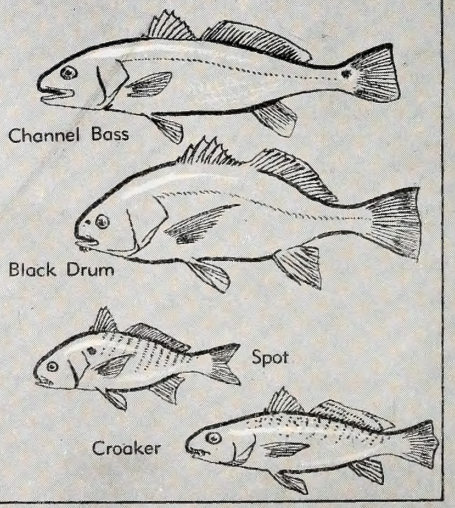




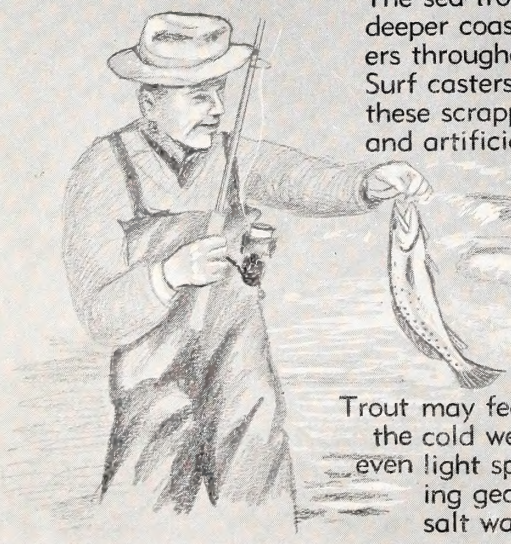
Weakfish or gray trout

The gray trout may travel the same routes as the speckled trout, and is often caught along with its close relative. It is a good sport fish, too.

OTHER MEMBERS OF THE DRUM FAMILY



The sea trout may stay in the deeper coastal sounds and rivers throughout the winter. Surf casters and trollers take these scrappers with live shrimp and artificial lures.



Trout may feed quite deep during the cold weather. Medium or even light spinning tackle or casting gear works well on the salt water trout.

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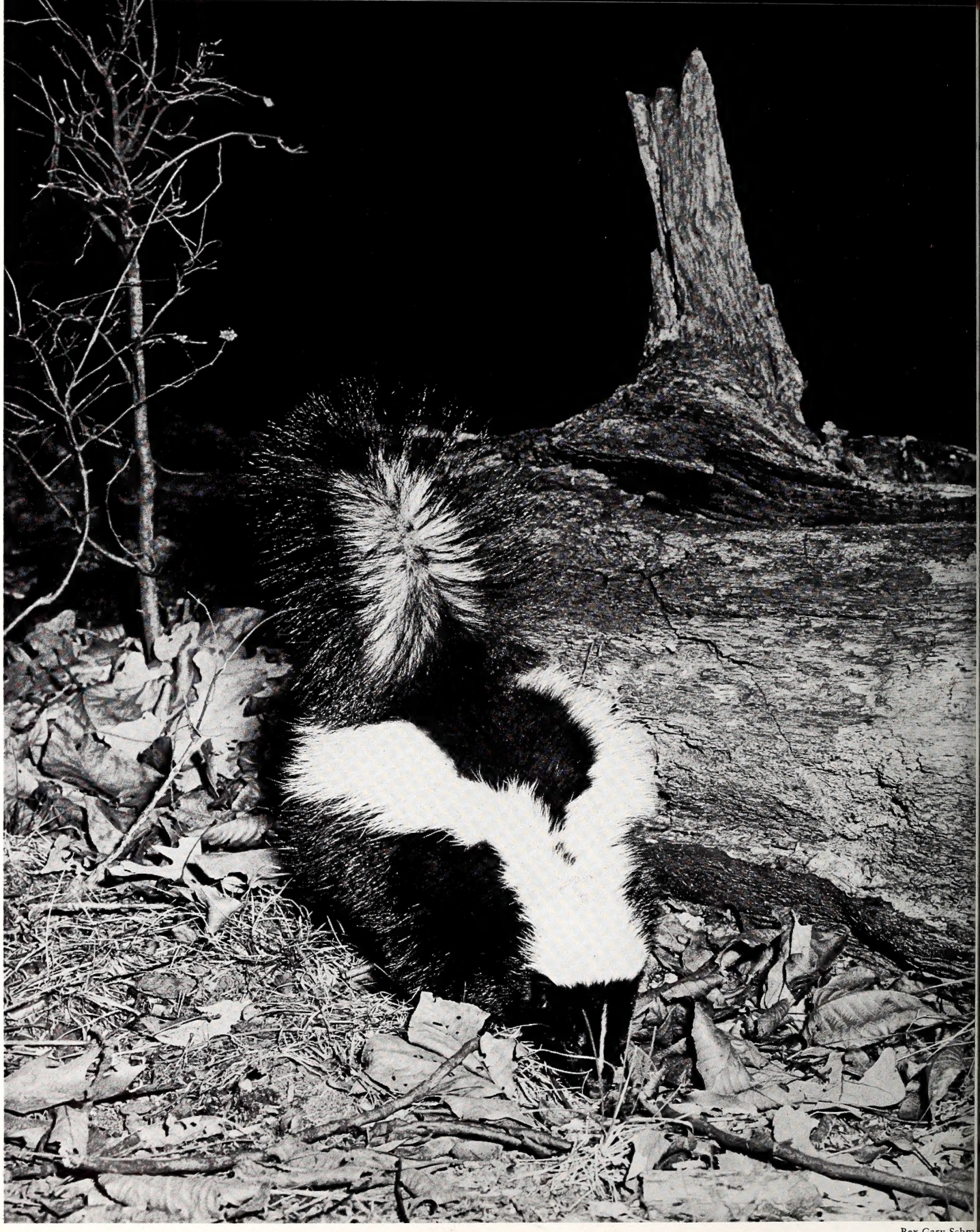

Rex Gary Schm

CLOSE ENOUGH!

The skunk has few natural enemies, and perhaps no close friends. The great horned owl will attack and kill the skunk but it is done with swiftness. Yet the skunk is nowhere abundant in its widely scattered distribution over the State. Ninety-eight percent of its food is insects and every skunk is the guardian angel of a garden acre.

Wildlife in north carolina

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State of North Carolina

TERRY SANFORD
Governor

North Carolina Wildlife Resources Commission

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COVER

The evening grosbeak is a chunky, short-tailed, brightly colored bird, nearly the size of a starling. Primarily a bird of western Canada, it is occasionally seen in our northern states during winter. For the past several winters, the evening grosbeak has been visiting as far south as North Carolina, and has been reported from the mountains, piedmont, and coastal plain. Watercolor painting by Richard A. Parks.

WILDLIFE IN NORTH CAROLINA recognizes the need for close cooperation between State and Federal conservation agencies and the people who hunt and fish—to bring about a restoration of our renewable resources. The Editor gratefully receives for publication news items, articles, and photographs dealing with the North Carolina out-of-doors, but reserves the right to reject materials submitted. Full credit is given for all materials published.

* * *

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Planting for Small Game

Part 1

by Luther Partin

Staff Photos

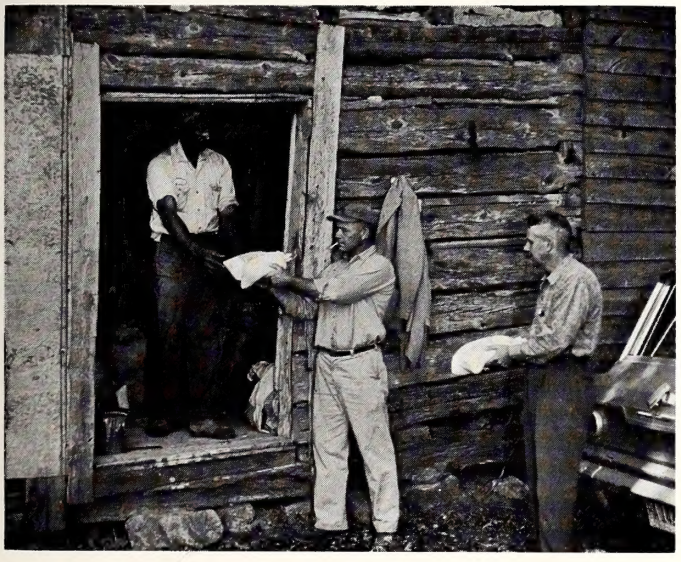
FOOD and shelter—these are basic requirements for the survival of man or beast. Food for sustenance and shelter for protection from predators and the elements. Be it an Eskimo or a bobwhite quail, the environmental needs can be expressed in the same terms. Naturally, the form in which these needs must be supplied is vastly different. Compare the Eskimo's ice castle with the bobwhite's shrubby chateau, for example. But take shelter away from either of these species of animal life and they are immediately faced with a serious problem. With the tools he must have to survive, the Eskimo can build another shelter from the very ice whose frozen hardness threatens his existence. But bobwhite, and other wildlife in general, must find other shelter already existing, or eventually perish. The end result is the same to people who love wildlife and hunting—wildlife is scarce or gone.

Although it's late for New Year's resolutions, how about making one right now to lay out some definite plans to increase the amount of wildlife on your land this year. As with many other land-use enterprises, planning for wildlife can be more logically accomplished at the turn of the year.

This is a particularly good time to get out and see the dividends some of your neighbors and friends are enjoying, as a result of their investments in time and materials to make conditions better on their property for quail, cottontails, squirrels, and other forms of wildlife associated with farmland.

There are those fortunate people who seem to have an inexhaustible supply of small game for hunting. During the hunting season they have a lot of friends, too. Talk to some of these people. You'll likely find that there's more than an element of luck involved. Maybe they've left a few den trees for squirrels and some oaks for acorns, instead of cutting all the "useless hardwoods" for pulpwood. Take a look at their

This weed rotation patch was host to three coveys of quail during the 1963 season. Practices like this help wildlife.



In the title photo at left, a border of shrub lespedeza is examined. This perennial plant is adjacent to a crop of annual materials, soybeans. This combination is a good one for year round food and cover for wildlife. Above, a Wildlife biologist delivers seed mixtures for spring planting.

A quail and dove banquet is spread on the ground under this specially planted food patch. Various millets and milo and other nutritious seeds will be welcomed by fall and winter.

This is the first of a two-part discussion of various plants and practices which can help provide food and shelter for wildlife in your area. Watch the March issue for completion.

cropping system. Do they grow the same row crops continuously in the same field without rotation, or is there a planned alteration of row crops, small grains (including milo and soybean), with some fields lying idle or in soil improvement crops, such as fescue or one of the lespedezas? These, and other similar farm practices, make small game a part of the farm harvest instead of pushing them "back down on the river," as we hear in so many places.

Anyone reared on the farm can certainly remember the large numbers of young rabbits and quail that were invariably seen while harvesting grain or cutting hay in the spring. It was no accident that they were there. Hay and small grain fields furnish excellent conditions for the spring miracle of reproduction of animal life. The close-growing plants not only provide cover, but also attract a multiplicity of insects that are needed in young wildlife diets. Cut-over grain fields whether left to grow in weeds until fall or planted to late-maturing summer crops, such as soybeans, or milo, can still be good sources of food and shelter for small game.

However, if the weed or crop residues remaining after harvest are plowed under in the fall, we have the same situation that was mentioned earlier. The food and shelter conditions are removed at the most critical time of the year. The wildlife using this area must move to less desirable habitat. Sometimes this results in crowding the new location causing competition between game species. Mortality from food shortages and predators can be severe, especially during inclement weather. This is where crop rotation becomes a valuable wildlife tool. Using this land for spring-planted crops would be a better measure of conservation for both soil and game. Left unplowed, with an unharvested strip around the border, it will continue its contribution to the welfare of wildlife all through the winter.

In addition to planning the farm operation to conserve soil, soil fertility, and wildlife, you'll find a lot of people these days who use food plots to carry wildlife through the lean days of winter. These may be in the form of annual food mixtures that are planted each spring, or established perennials that become permanent sources of food and shelter. Materials for both of these types of plantings are distributed free of charge by the North Carolina Wildlife Resources Commission to individuals or groups who are interested in having more wildlife.

Several different planting materials are being used at present on Tarheel farms, and research goes on constantly to find other plants or combinations of plants that may be more productive or better suited to certain areas. Commission biologists are doing some very interesting work right now with several native weeds of Tarheelia. We should have some of the results available for publication in a few months. The observations thus far recall the statement by the poet Emerson, "a weed is a plant whose virtues have not yet been discovered." The definition might be re-stated by the modern biologist to sound something like this, "a weed is a plant whose virtues are not immediately obvious."

Since Emerson's day, agricultural experiments have revealed that one or two years of weed growth in rotation with to-

bacco is effective in controlling nematodes and various root diseases of tobacco. A valuable side benefit of weeds in the rotation is the increased food and shelter made available to wildlife. The weed seeds produced on an acre of idle land will sustain a surprising amount of life during the months of short rations. It's very interesting to observe the different kinds of animals and birds that will use a weed field during the year.

One of the most popular plants distributed by the Wildlife Commission is shrub lespedeza. This is a bushy, perennial legume which may reach a height of 10 feet on good soil. It is shade tolerant, making it suitable for woodland borders, old plant beds, and especially valuable for semi-shaded spots in open woods. Bicolor and other varieties are available for the different conditions of soil and climate in our state. The tall plants furnish feeding cover and produce a good quantity and quality of seed which are a choice quail food, while rabbits eat the bark and leaves. Shrub lespedeza has proven to be a successful small game producer when planted in strips or patches large enough to feed one or more coveys of quail through the winter.

Another virtue of this plant is the manner in which the seeds are released. They drop gradually over a period of two or three months rather than all at once, as do some legumes that produce large quantities of seeds, only to have them dropped on the ground to rot before they are really needed by small game. Shrub lespedeza seed, still green and fresh from the pod, can be found on top of new-fallen snow, even as tell-tale bud swellings mutely herald the arrival of spring.

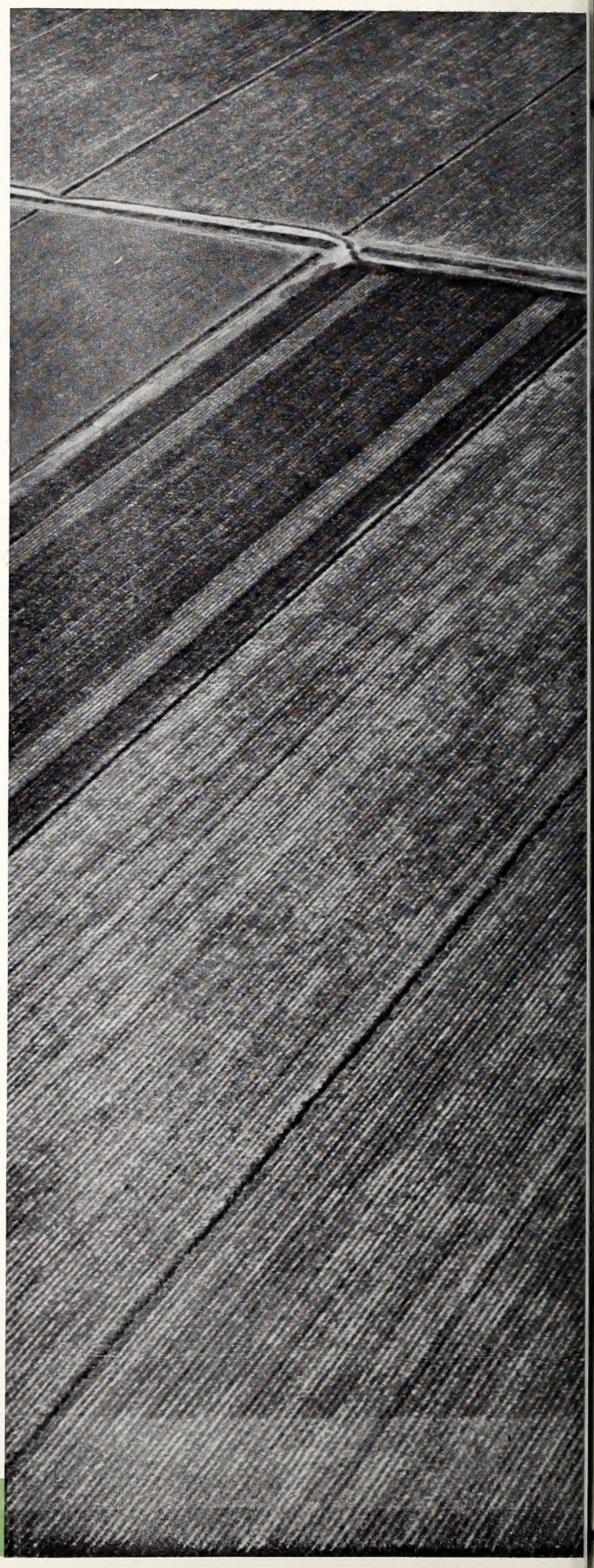
Shrub lespedeza will not prosper in wet or deep sandy soils or in areas where livestock are permitted to graze. Seedlings should be used in preference to seed for quicker production. However, in places hard to reach, scarified seed will do a satisfactory job, but more time will be needed for the planting to produce a full seed drop.

Another perennial summer legume distributed by the Wildlife Commission is sericea lespedeza. Sericea seldom exceeds three feet in height, but its growth from the crown and from re-seeding forms a dense mass of vegetation. Even after frost kills the plant it remains erect and retains many of the dried leaves. Production of seed is very good, and they remain on the plant very well. Small patches make excellent loafing, roosting, and nesting cover for quail. Rabbits also use it freely for both food and nesting cover. Most of the sericea provided to farmers by the Wildlife Commission is planted in 10-15 foot strips on the field side of border plantings of shrub lespedeza. Where cover is scarce, this practice can often mean the difference between partial and complete success.

Sericea is a very useful plant in that it grows well on poor, dry-natured soils and its lifetime is yet to be determined. There are fields doing well after several decades without maintenance or fertilizer. It does not make a lot of visible growth the first year. Most of the plant food produced goes into building an extensive root system. After the second year it can more than hold its own in competition with native plants.

For field borders, terrace outlets, or turn rows for equipment at the ends of crop rows, sericea has proven to be a good choice. Its adaptability to poor soil and low maintenance needs and its soil-protecting and wildlife-promoting characteristics make it difficult to leave this plant out of your conservation plans.

(Continued next month)



Not much cover for small game here. "Clean" farming often results in reduced wildlife habitat and no amount of "stocking" will help. Give game the basic necessities of life.

Meet Br'er Raccoon
He's a Ringtailed Rascal!

By Chester Davis

Reprinted from Winston-Salem Journal Sentinel

I don't know why it was, unless, maybe, it was because he was born and raised in coon country, but my father always made a sort of family totem out of the coon. When my brother and I were kids, Dad always signed his letter to us "Raccoon." Later, when my own boys came along, he changed it to "Grand-daddy Raccoon" and took to drawing a ringtailed animal alongside his signature.

For that reason I've always felt that the raccoon was a little bit special. Over the years I haven't learned anything about the coon to cause me to change my mind, either. The trouble is, I never have been able to learn as much about the coon as I'd like. Besides being sort of special, he's as secretive as a second story man looting an insomniac's bedroom.

Along with the owl, the bat and the flying squirrel, Br'er Coon is a night operator. He'll come down out of his den tree in the deep dusk, along about the time the whip-poor-wills are flogging the building night. Except in rare cases, when food is scarce and he is hungry, he'll be back in his den before first light.

Even men who spend a great deal of their time in the woods rarely come across a coon in the light of day. Oh, they may pick up a lost baby coon now and then and they may even see an adult sunning himself high on a tree branch. But that's about the extent of their contact with this wary animal.

As a result we don't know as much about the raccoon as we should and a good deal of what we do know is supported by little more substantial than the sort of tales coon hunters tell around the fire while their hounds bell out the unraveling story of a night-time chase.

We are inclined to think, for example, that the coon is a somewhat uncommon animal in this state. As a matter of fact, he thrives across a range which covers a very large part of the American Continent. While no one has yet conducted a coon census, the evidence available suggests that the raccoon ranks right alongside the possum and skunk in numbers.

He Likes Water and Trees

You find him wherever there are stands of big hardwoods and ample amounts of water. In North Carolina that rules out only the pine and spruce forests and the high mountain ridges where water is scarce.

Like most animals, the coon favors good, rich land. Such land produces more coons and bigger coons. It also is the sort of land that attracts men and their plows. As a result the raccoon and man have competed for a place to live over the past two and a half centuries.

For most animals, that's a one-sided competition. But Br'er Coon is as adaptable as a chameleon. When man cleans off the flat lands, the raccoon retires to the forest edges and continues to thrive, even though, over the years, man has put the axe to some of the finest coon cover.

In the tidewater section of this state, the raccoon is common to the point of being a pest. As you move west towards the mountains, he becomes less common. Today coons are scarce in most sections of the highlands, but thanks to the Wildlife Resources Commission's program for transplanting Tidewater coons to Piedmont and mountain sections, he is staging a comeback even in the high hills.

When the white men first came into this area they learned of this curious animal that wore a Hallowe'en mask the year around and boasted a ringed tail. The Algonquin tribes of Virginia and North Carolina called him "arakun," meaning "he who scratches with his hands." The white men adopted the Indian word for their own and did that in their usual round-about fashion.

The John Smith Version

When Powhatan, father of Pocahontas, gave John Smith a coon-skin robe in 1607, the English captain, one of the world's truly original spellers, wrote first of the "rahaugcun," then of the "rauroughcum" and, finally, of the "rarowcun." Others, like North Carolina's colonial surveyor John Lawson, took it from there and, in due time, came up with "raccoon."

In those early days, when finding food in the virgin forest was a good deal more difficult than we like to think today, the coon was prized both for its flesh (dark meat with the combined flavor of veal and lamb) and its pelt. Along the frontier, particularly in the great valleys west of the mountains, coon skins were a common form of currency. In the state of Franklin (now Tennessee), public officials were paid in pelts. Members of the General Assembly, for example, drew three coon skins a day.

Besides providing food and clothing for the pioneers (and the export in pelts got up to about one million skins a year), the coon also did his share towards enriching the language. Frontiersmen said that a fellow who was slicker than a bull frog in a barrel of eels was real "cooney." The man who first

used the phrase "barking up the wrong tree" undoubtedly was a coon hunter.

But these early observers also mixed legend with fact when they told of the coon. John Lawson, for example, reported that coastal raccoons used their tail as bait when fishing for crabs. Other men said that the inland coon dabbled his toes in the water to attract crayfish. When the crayfish latched on to a toe with his pincers the coon flipped him high on a handy bank.

Those tales while interesting, are by no means as fascinating as the facts themselves.

Because he is flat footed like the bear, the coon often is described as the little cousin of the bear. The two animals are related but very distantly. The coon's closet kin are the greater and lesser panda of Asia.

The coon is the smallest member of the family. It's a rare hunter that ever catches a raccoon weighing less than 20 pounds and most of them talk of old boars weighing 30 pounds or more. The fact of the matter is, the average North Carolina coon will weigh 15 to 20 pounds. Anything over 25 pounds is in the trophy class and a 40-pound coon is a museum piece.

All things considered, the coon is perhaps the most distinctive of American animals. His button-black eyes sparkle with the prying curiosity of an old maid visiting a monastery. He walks with a sort of arched-back waddle(not unlike the skunk's shuffle) and leaves tracks which resemble the imprint of an infant's hands. He uses his five-toed forepaws more effectively than an infant uses his hands. The black burglar's mask that extends from both cheeks across the eyes warns that he is capable of—and often up to—mischief.

Stays Active in Winter

Although the eastern Indians ranked him as one of "the seven sleepers," the raccoon is not much of a hibernator. When the snow is soft and deep and the trees groan under the push of the Winter wind he retires to his den to sleep. But this is not the near-death sleep of the woodchuck. The coon's metabolism stays normal and he is ready to yawn and get on about his business as quickly as a thaw sets in and a crust forms on the snow.

And in January and early February, his primary business is to locate an agreeable female and proceed with his pre-parental chores. There are those who say that the coon is polygamous. Others say that he is monogamous and a better-than-average family man at that. Here, as in the case of the human species, the evidence is confusing.

In any event, 63 days after mating, (the same gestation period as that of the dog), the female will bear a litter of two to six (the average is about four) tiny (2½ ounce) raccoons. The babies, blind for the first 18 days or so, are fuzzily furred and, mask and all, bear their adult markings.

Given the choice, a coon will make his den in a hollow of a large hardwood tree. But such trees take 75 to 100 years to develop and in our day they have been increasingly hard to find. Although it is illegal, hunters sometimes cut them down. More often these trees, because of their rotted hollows, are cut out as culls in selective timbering operations.

As a result, the raccoon, a very adaptable animal, has more and more taken to the rocks. A fissure in a ledge, a cave in a cliff, a great rock pile and, on occasion, even a tile drain will serve him as a den. This change probably is prompted by a shortage of good den trees although there are those that say that the canny coon has discovered that a rock house beats a tree den six ways from Sunday when it comes to escaping from a pack of loud-mouthed hounds.

For the coon, the den tree is more than a nursery. It is a year around home. Being social animals, coons enjoy one another's company. Ordinarily a family of coons will remain together until they are either scattered by hunting hounds, or, responding to the mating urge, set off to find a den tree of their own.

It is here, along about the time the bats begin to fly, the mother coon leads her family off on their first foraging trips. The trips begin when the youngsters are about two months old and they begin as is proper with coons, in light-hearted hilarity.

The little fellows start down the big tree every which way. One, like a bear, will ease down the trunk tail-first. Another, like a squirrel, will attempt to follow his pointed nose down the tree. Still another will compromise and scramble down on an angle. Although the raccoon is by no means as agile as a squirrel, he is remarkably sure-footed.

One way and another—scrambling, sliding, slipping, scratching and sometimes falling—the family gets to the ground. This adventure, opening as it does a wide new world on the forest's floor, is almost too much for an animal as fantastically inquisitive as a coon.

The youngsters tag along after mother but not in the mannerly fashion of skunks. Instead they hump off on small side excursions where, with great snuffs, they make exciting discoveries. A young coon who has captured some exotic object —say a beetle—and, head cocked, turns him in his paws as he studies the strange creature, is a perfect example of unbottled curiosity.

Along the route the youngsters will scuffle, rising on their hindquarters, churring fiercely, and boxing with their forepaws. An old Negro who once watched such an exhibition commented, "De coon suttinly mus larned his boxin' tricks sparrin' wid lightnin!"

At the outset these nightly trips are conducted in the vicinity of the den tree. When there is a suspicion of danger, Mother Coon will send the youngsters scrambling up the tree in the manner of a mother bear.

By late summer the family excursions cover several miles, but that traveling rarely takes the family more than a mile or so from the den tree.

On these trips the raccoon exhibits a characteristic which is almost as marked as his curiosity. He will eat anything! In the summer and fall he piles on layers of fat by dining on frogs, tadpoles, minnows, (when he can locate them in a shallow, isolated pool), crawfish, insects, berries, and nuts of all sorts, fruit, both wild and domestic, eggs (which he holds in his hands and sucks human fashion) and any flesh (gathered by raiding both nests and poultry houses) that is small enough to handle and doesn't bite back.

In the winter the coon, helped along by accumulated layers of fall and summer fat, dines on what mice he can catch and does well enough. Spring, a season of lovely promise, often is a starvation time for the raccoon.

Partial to Young Coon

When the farmer's corn patch is ripe—that is, when the ears are in the milk stage—a family of coons exhibits an appetite that should excite envy in the bottomless-bellied woodchuck.

Starting on one edge and working inward, the coons bend over the stalks and strip off the ears. (Bears move through a

corn field like tanks, uprooting the stalks as they go and champing on both kernels and cob. Squirrels use the coon technique but they nibble only on the corn kernel and don't clean the cob in the human—and coon-fashion.

It is commonly said that the raccoon always washes his food before he will eat it. This is not entirely true. Busy in a corn patch, a coon is too sensible to hike for water each time

Jack Dermid

Cute, huh? Yes, but mischief is very likely being planned in these little coon heads. Soon this pair will be on their own.

he pulls down a tender ear. He hunkers down and eats where he is. But this is rather the exception. The coon loves dampness almost as he loves the dark. Most of his foraging is done along the margins of streams, lakes, ponds and swamps. There, staring idly about like a vacant-headed day dreamer, he gropes under rocks and into the mud seeking shellfish, crayfish, frogs, and anything else that is edible and which he can grab and hang on to with his sensitive paws.

Here he regularly douses his food (sometimes to the point it is soaked into a flabby mess that could appeal only to a hungry coon) before he dines. Sometimes, as when he has a frog, he seems to do this to tease in the manner a cat will toy with a mouse. More likely, however, the fastidious coon prefers to wash away the grit and mud before popping a morsel into his mouth.

Pet coons, even when fed absolutely clean food, often will sulk if denied water in which to douse each bite. It is this habit that gives the coon his Latin name "lotor," which means "the washer." The Moravians, observing this trait, called him the "wash bear."

Down the years the raccoon has been hard hunted. His natural enemies, the fisher, the panther and the wolf, quickly were killed off by white hunters. But the farmer and his traps and keen-nosed hounds more than took up the slack.

On the frontier the coon was the source of heavy robes and, more important, of hats. When the old-time mountain folks saw a young buck decked out in a coonskin hat, (with tail attached), a calfskin vest, and carrying a fiddle, they said, "Nail up the shutters, Maw! Something's going to bust loose tonight!" It was the same during the 1920's when a coon-skin coat and a hip flask became symbols of an even yeastier period of wild-oat sowing.

Although there has recently been a spurt of interest in using raccoon in the fur trim of m' lady's coat, the current price of less than $2.00 is a far cry from the $10 a pelt in the 1920's.

North Carolina trappers took an estimated 56,000 raccoons during the 1962-1963 season.

On top of this, the coon remains popular—although not as popular as he once was—as a sporting prize. Here, too, the harvest is relatively heavy.

Coon Hounds Rate High

Coon hunters sometimes sniff at fox hunters and say that any hound, even an eleven-year old, sore-legged hound with a nose cold, could follow the tracks left by a rank-smelling, furry-footed fox. It takes a real hound with a double-bored nose, they said, to follow the trace left by the flat and bare-footed coon. (They fail to add that the short-legged coon often leaves a body odor as he waltzes through the brush.)

A bred-in-the-bones coon hunter—and they are a daffy breed who go charging about in dark woods, wading creeks, floundering through swamps and risking grave lacerations from briars—prizes a straight coon dog much in the manner he prizes his wife. These dogs hunt coon and nothing else. When they tree their prey, they toll in the hunters with come-hither baying that causes otherwise sensible men to behave as if they were witless.

A good pack of dogs may tree a coon within five minutes after striking a hot trail. And the same pack may pick up a trail and run five hours without putting Br'er Coon up a tree.

Fox hunters often contend that Reynard, with his cunning, speed, and endurance, provides a chase which the slow, tree-climbing coon cannot match.

An unbiased observer, after sampling both fox and coon chases, is likely to conclude that if the red fox took to a tree—rather than to a hole in the ground—when the hounds got to breathing down his neck there would be more fox pelts than coon skins nailed to the sides of North Carolina barns.

The coon is not fast, nor is he a marathon runner, but he is cagey and an experienced raccoon knows tricks which will encourage hysteria even in a pack of good hounds.

He will run along a down log from one end to the other and then double back half way and leap off at right angles. In a slash criss-crossed with downlogs, this trick can cause even a cold-nosed hound to bay mournfully in the night.

Even when he's treed he won't quit. If neighboring trees are handy, he will take to the branches and vines to leave the pack far behind "barking up the wrong tree."

NORTH CAROLINA WILDLIFE

RESOURCE-O-GRAM

A ROUNDUP OF THE LATEST WILDLIFE NEWS

Hunting For Most Ends February 15

February 15 marks the end of the open season on rabbits, quail, wild turkey and grouse. Raccoons and opossums may be hunted until March 1 except in Alamance, Caswell, Chatham, Durham, Granville, Guilford, Lee, Montgomery, Moore, Orange, Person, Randolph, Richmond and Rockingham counties where the season closes February 15. Trapping for most furbearers ends February 15 except in a few counties. Trappers are urged to consult official regulations as to closing dates in their counties.

WILDLIFE Reaches 90,000 Monthly Mark

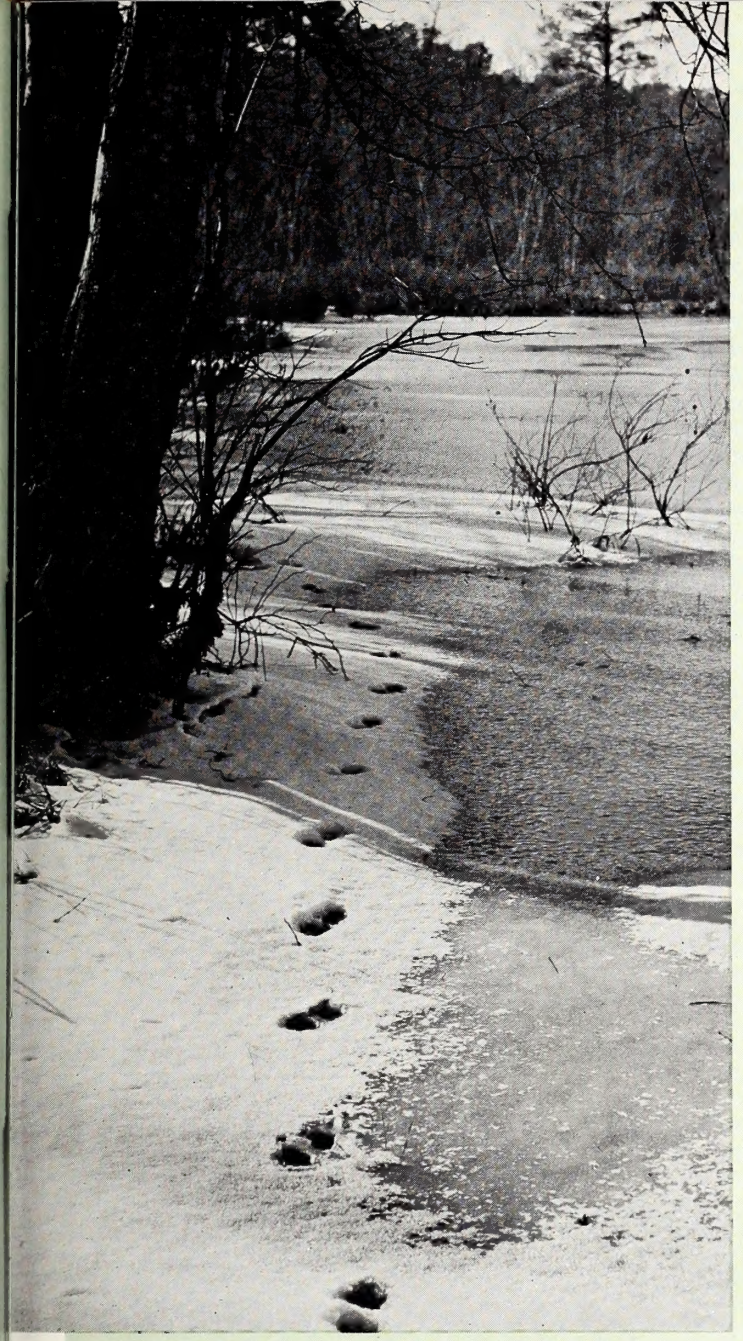
With this issue 90,000 copies of Wildlife in North Carolina rolled off the press. In a subscription sales campaign conducted by Wildlife Commission personnel nearly 25,000 persons bought new subscriptions or renewed old ones, and some 8,000 subscriptions were given as Christmas gifts. Because of this upsurge in our circulation, a number of our subscribers will receive this issue as their first. The editors sincerely thank those who subscribed last fall for being patient with us.

Wildlife Habitat Planting Stock Available

The Wildlife Commission's division of game will accept and process applications for shrub lespedeza and multiflora rose seedlings until March 31. Persons wishing to obtain these planting materials free of charge may get application forms from Division of Game, Wildlife Resources Commission, Box 2919, Raleigh.

Mountain Trout Ready for Early Spring Stocking

State and Federal trout hatcheries have produced almost 700,000 keeping-size mountain trout for early spring stocking in designated mountain trout waters. Trout produced in federal hatcheries will go mostly to federal lands in western North Carolina, while those produced in state hatcheries will be stocked in waters otherwise opened to public fishing. Fingerling trout will be stocked in the upper reaches of trout streams next fall.



Raccoon Trail. Br'er Coon walked leisurely along this frozen shore without finding a meal. If he had been in a hurry, the trail pattern would have been different. A light snow provides the best opportunity for tracking secretive wild game.

Reading Wildlife Signs is Great Winter Sport

Photo Feature by Jack Dermid

WONDERING what to do during the interval between the closing of the hunting season and the opening of the fishing season? There is no need to trade outdoor adventure for an armchair, for the out-of-doors remains just as inviting and wildlife just as fascinating—if you learn to read and to interpret wildlife signs.

Almost every living creature, from the earthworm to the white-tailed deer, makes telltale marks on the landscape as it feeds, plays, builds its houses, or escapes from enemies. Animals leave footprints on sandbars, tooth and clawmarks on tree trunks, remains of feasts, bits of hair, droppings, and more. It is fun, but not always difficult, to identify wildlife signs as to species. The real challenge comes from interpreting how animals live and die from the bits of evidence you have observed. (Novice and outdoorsmen alike will find **A Field Guide to Animal Tracks** by Claus Murie invaluable in unravelling the mysteries of the trail).

Feeding Sign. A gray squirrel used stump top for a banquet table. With sharp incisor teeth, he cut away cone scales to reach tasty pine seeds. Few Tarheel game species leave more conspicuous signs, including leaf nests, diggings, and tracks.

Rabbit Tracks. With hind feet placed side by side in front, the rabbit hopped from right to left here. Gray Squirrel's track is similar, but trailing forefeet are typically paired.

Beaver's Dam. Some wildlife signs are easy to identify while others, particularly if fragmentary, require keen observation and experience to decipher. All beaver sign is not so simple.

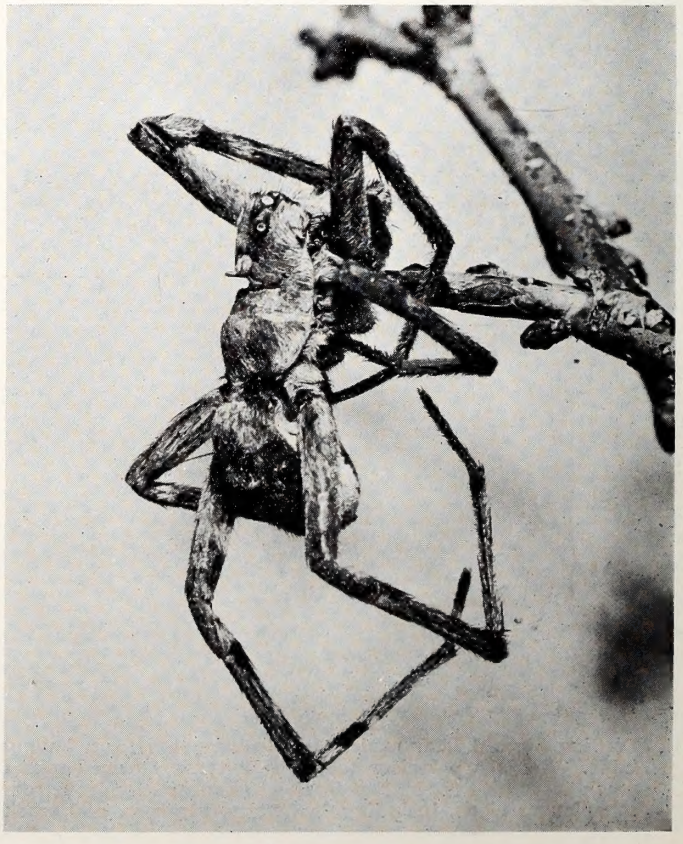
Winter Sport..

The photos on these pages are but a sample of the vast array of wildlife signs which await discovery. Discover them yourself and enjoy an outdoor sport that is second to none.

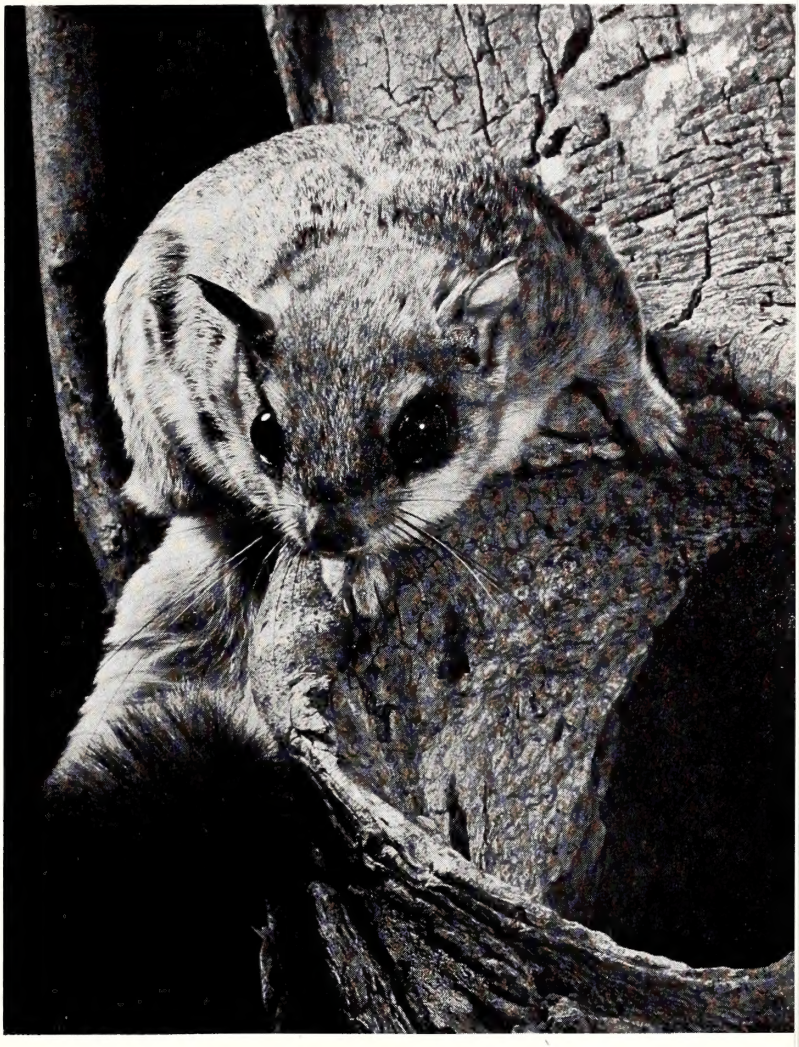
Unravelling the mysteries of the trail is a challenge that calls for good detective work. It gives more meaning and fun to hunting and fishing and makes woodland hiking a sport in itself.

Wild Turkey. This heavyweight sank deeply into the snow and left four-inch tracks. Firsthand experience in reading various turkey signs may pay dividends in future hunting seasons.

Shrike's Larder. By its habit of impaling spiders, lizards, grasshoppers, mice, and other small creatures on barbed wire and thorns, the shrike has earned the nickname of butcherbird.

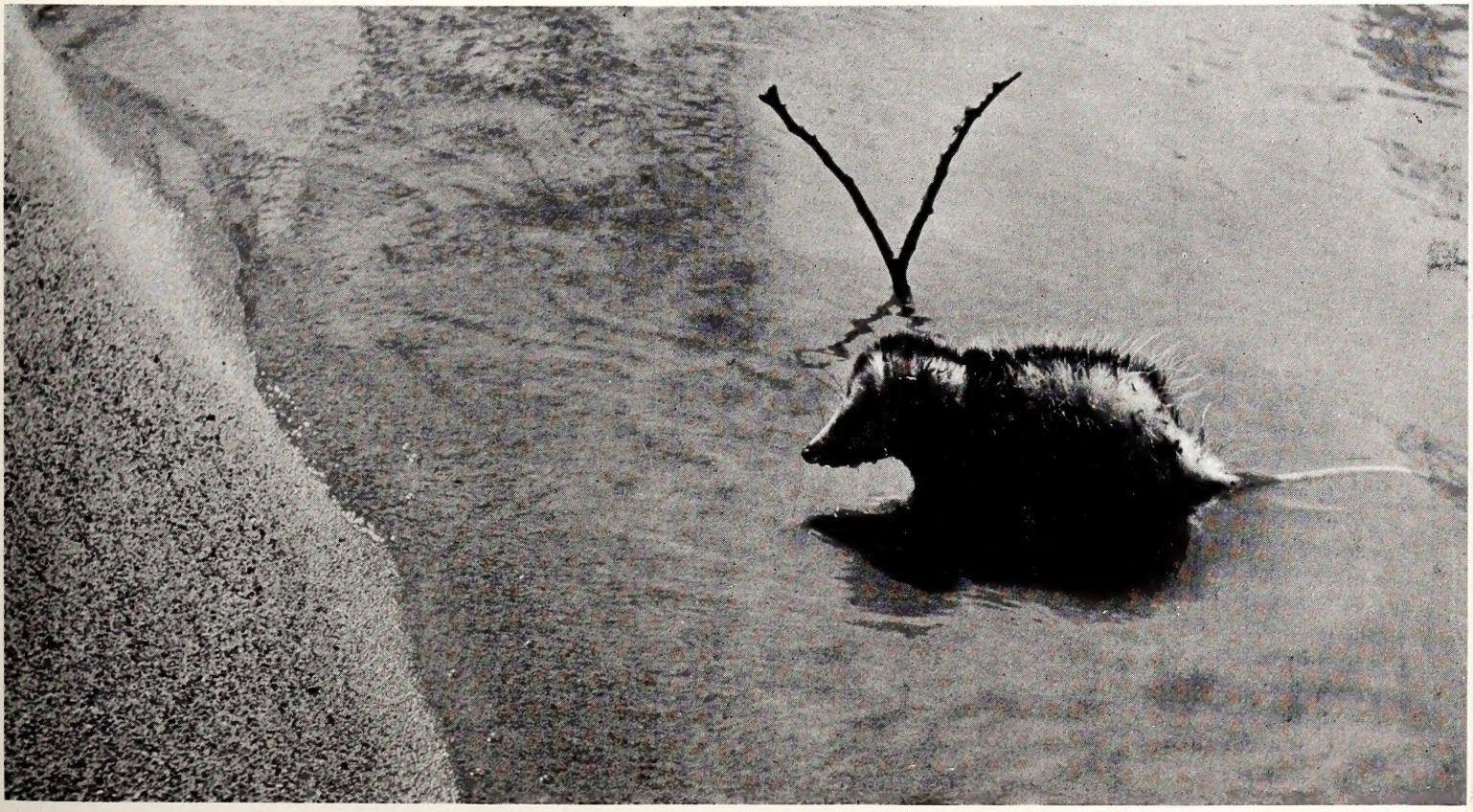


Hunting Cat. Prints almost in single file, a house cat crossed its own trail. Snow reveals in stark clarity the numbers of free-hunting cats and dogs that roam over the countryside.



Flying Squirrel's Hollow. The occupant of a wildlife home is seldom seen, but its use may be indicated by bits of hair or clawmarks around entrance. Hair is frequently distinctive.

Recording Surface. When this wading opossum comes ashore, he will write his name on the sandbar with distinctive footprints. There are many such pages in Nature's book waiting to be read.



Nature's Deep Sleep

HIBERNATION

by W. L. Hamnett
Curator, State Museum
of Natural History
Raleigh

Did he see his shadow? Well, it looks like this groundhog is heading back into the burrow for another nap. The groundhog or woodchuck is one of our more consistent hibernators.

THE winter season in North Carolina has a special bearing upon the habit and activity of some forms of animal life. As we shall see, some animals living farther to the north, although indigenous to our state, may make a definite response to cold weather there but not here.

The response to cold weather under consideration is the matter of hibernation. Hibernation is a resting stage during which animals exist in a more or less torpid condition. It is natural that, after a period of intense activity when food and energy have been utilized to produce offspring, animals should go into a resting stage while the world is coldly unproductive.

Hibernators usually occur in temperate, arctic, antarctic, and alpine regions. Many cold-blooded land animals (frogs, toads, insects, etc.) seek aquatic habitats or burrow in the soil in winter. Cold renders them helpless by reducing their metabolic rate. The ability of insects to spend the winter in the egg or pupal stages is of great survival value and probably developed partly as a protective and survival device in response to climatic changes.

Among our mammals, hibernation is limited to representatives of the moles, bats, mice and rats, certain carnivours—raccoon and bear, woodchuck, and various squirrels. In the colder regions of our country hibernation is more noticeable.

The dormant condition of hibernation may be induced in an animal by various means. Among common causes starvation, low temperatures, desiccation, and obesity may be mentioned. Among mammals, hibernation can be brought about more easily by starvation than by low temperature. Some mammals either become dormant or migrate when food becomes scarce or fails. Many animals cease to feed when temperatures fall to a certain point, but mammals, unless they hibernate, increase heat production at low temperatures. There are a few mammals that become torpid (lacking in energy or vim) at low temperatures. Rodents may delay their hibernation beyond the usual time if high temperatures prevail, but, if hibernating, may continue to do so at high temperatures. Some remain active until they become very fat and then go into a torpid state. Dormancy comes about from various causes, which differ in different animals and habitats.

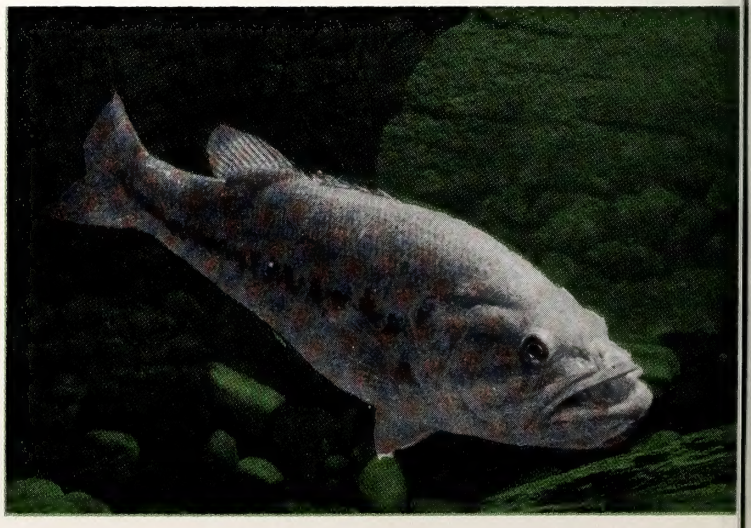
A dormant animal is not wholly inactive. It must use up its stored food reserves while its metabolism proceeds at a very low rate. Hibernating mammals show heart block and a peculiar type of respiration in which a few rapid movements alternate with long breathless periods. They lose weight.

Fish in Cold Storage

Some fish remain active until actually frozen into solid blocks of ice, and many of them survive such freezing as long as body tissues are not actually frozen. The term hibernation probably should not be applied to fish and their condition during the colder parts of the year. We often say that they are "sluggish" or even inactive when water temperatures drop below about 45°F. But even here we must modify this by separating trout from the warm water fishes such as bass and bluegills. Trout apparently have systems "geared" for low water temperatures and often continue active and feeding right through the winter months. Perhaps we have forgotten that our trout spawn in the cold winter months.

Since the entire metabolism of fish, that is, the way their systems work, the digestion of food, the rate of heart beat and so on, is based on the water temperature, these metabolic processes must be much more flexible than similar processes of mammals. A fish has no control over its body temperature, while a mammal has a built-in automatic thermostat that

Most fish in inland waters eat and move about a limited amount during cold weather. This bass is waiting for spring.



maintains a rather constant body temperature.

So, many warm water fishes certainly do "slow down" as the chill of winter drops the temperature of the surrounding water. Yet they eat—some, and move about—some. A minnow eaten by a bass whose temperature is 47°F will take many times longer to digest than the same minnow taken at 77°F. Simply, a fish doesn't need as much food (or oxygen for that matter) at low temperatures. But as far as we know, fish do not sink to the bottom of their dark, watery homes and "sleep" soundly all winter long. Neither do they bury themselves in the protective mud and leaves of the pond or lake bottom for "warmth".

Since relatively little food is eaten by fish during the colder months and even much of this is not "used" by the system, fish grow practically none at all for several of the winter months.

Sleepy Mammals

Most of the northern species of bats hibernate in caves, hollow trees, or in other protected places during the winter months; but there are some species which migrate to the south as birds do when insect activity ceases. If bats are disturbed during their "winter nap" they are are apt to fly about looking for food and exhaust their reserve energy as very little food is available for them at this time.

The black bear is active all winter in mild regions, but in the northern section of its range it hibernates when the ground is covered with snow. When it is ready to retire from activity, the bear makes an excavation under the roots of trees, scrapes in some leaves for a bed, then goes to sleep. Its sleep is not as deep as the real hibernators, however, and it is easily aroused. It seemingly sleeps with "one eye open." The cubs numbering one or two, seldom three, are born during the winter sleep of the mother.

The matter of hibernation is best exemplified by the woodchuck or groundhog. Most people are familar with Groundhog Day. Down below the frost line the groundhog, fattened during the summer feeding, goes to sleep. Usually two of them cuddle together, and during hibernation they are in a deep sleep. Their vital processes are reduced to a minimum; the heart beat and respiration are slowed down to an almost imperceptible point. The reserves of fatty tissue, built up during the summer months, furnish sufficient nutrients for the long period of inactivity. If on February 2, when the groundhog may emerge from his den, he sees his shadow cast by the sun, he scampers back into his den for another six weeks of winter weather. This legend is connected with the idea that a warm February prognosticates a late spring.

The largest of our native rodents, the beaver, partly hibernates within its den or lodge but ventures forth in mild weather. Food is stored in the pond or lake for winter use, and the sticks from which the bark has been gnawed are used in reinforcing the dams.

Like the beaver, our muskrat does not truly hibernate but spends much of the winter within its house, although it frequently goes on excursions when the ponds and marshes are frozen.

Some other mammals that may hibernate or assume a torpid state of being, but not necessarily so in our area, would be the raccoon, skunk, and chipmunk.

The raccoon is a hibernator in the same limited sense that the bear and skunk are. He goes into a sort of a cold-sleep when the weather gets too chilly for his comfort, and probably arouses to active life as soon as the temperature is well

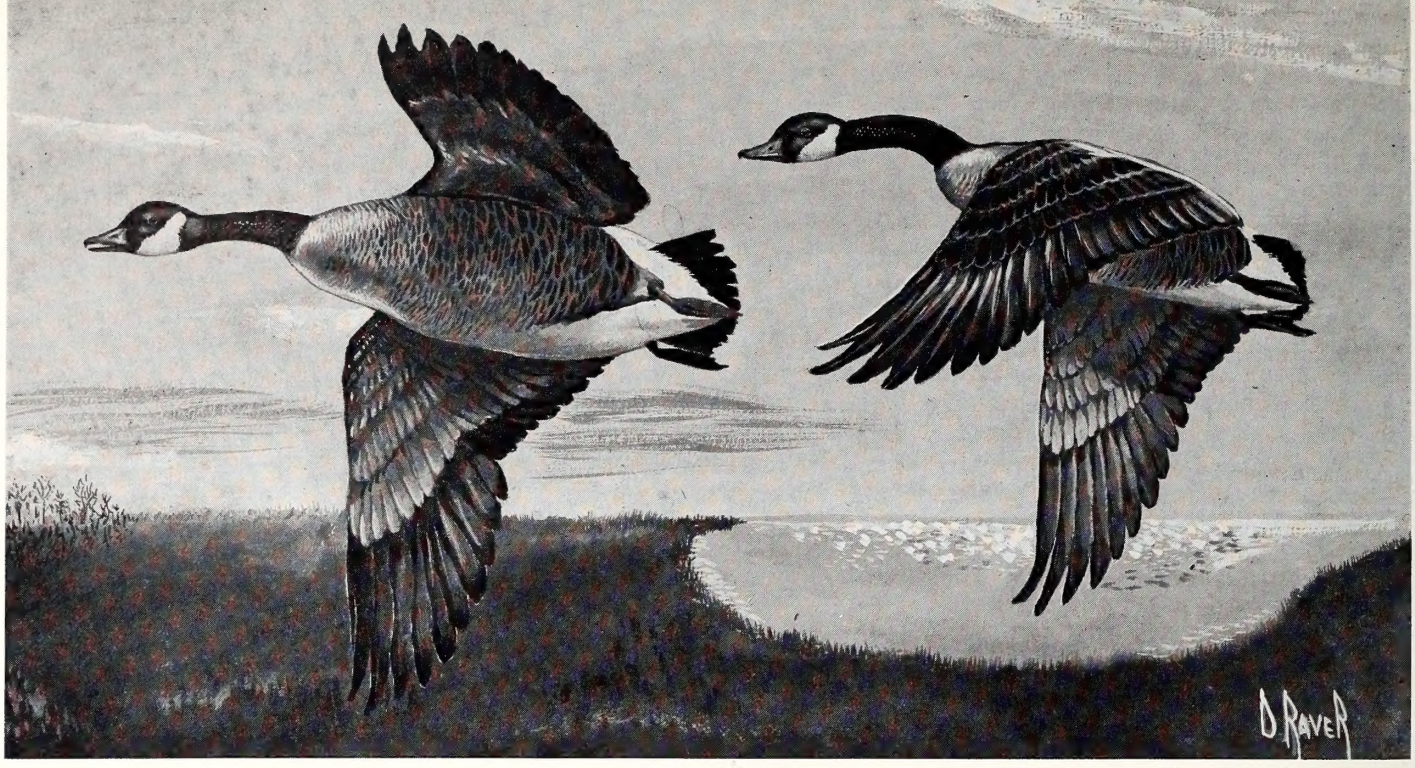
The opossum is a light sleeper in winter and likely goes about his normal routine in all but the coldest weather.

above zero. In the northern part of the range, he is dead to the world for at least three months. The chipmunk never really goes into a torpid state because he can be aroused if disturbed in his den during the winter months.

It should be mentioned (though not occurring in our state), that a bird hibernates. In California the Poor-will, a relative of our Whip-poor-will and Chuck-will's Widow, has been observed and studied in a state of hibernation. Tests and checks made indicate the bird provides all the characteristics that are associated with hibernation.

Hibernation is truly a fascinating phenomenon in the life of some animals, it safe-guards the surety of perpetuation of the species among many that do not resort to another interesting phenomenon—migration.

"Who turned on that light?" Chipmunk wasn't ready to get up since he sleeps quite soundly from late fall till spring.



Mattamuskeet Realm of the Canada Goose

by Duane Raver

LAKE Mattamuskeet, which means Dry Dust in the romantic language of the Indian, is a bean-shaped saucer of fresh water some thirteen miles long by five miles wide, less than six feet deep. The lake covers almost 1/6 of Hyde County. At one time in its colorful history, the lake is said to have been as deep as 11 feet and supported some pre-Civil War navigation. Another almost fantastic facet of the Mattamuskeet story stems from the fact that the lake bottom is said to contain more than 60 square miles of the most fertile soil in the world.

Just how and when this winter home of tens of thousands of Canada geese had its origin is anybody's guess. One theory is that the sprawling 45,000-acre lake is of meteoric origin; another speculates that it is a natural depression and was once an arm of nearby Pamlico Sound. The local Indian explanation of a severe drought followed by a consuming fire that crackled and smoldered for more than "thirteen moons" may be some basis for a third theory that Mattamuskeet was a hugh peat bog which finally burned itself out. More practical minds consider it unlikely, however, that such a fire would burn so far below sea level this close to vast Pamlico Sound.

Probably the closest that we come to the actual story of its creation is the opinion of the U. S. Geological Survey which states that Mattamuskeet is most likely of natural origin and was once a rambling juniper swamp. The lake bottom still is jack-strawed with juniper logs and stumps which often bob up to the surface and float in the shallow, tea-colored water.

The logical hope of a gigantic truck farm was quite naturally followed by the idea of draining the vast lake and thus creating a lush, productive area, unparalleled on the North American continent. Why not build a new Holland—a land below the sea—right here in the new world? The events that followed this idea's conception appear fantastic in retrospect but were coldly real to most of the schemers who set the plan in motion.

As early as 1789 the first drainage board in the United States was appointed by Governor Johnson with its purpose that of making the lands of Hyde County available for farming. Practically nothing was accomplished by this group. No real effort was launched to reclaim Mattamuskeet until 1909 when a half-million dollar bond issue was floated for the project. A gigantic pumping station was erected and a vast system of canals was begun. The plan faltered, funds ran out, heavy rains caved in the canals and man found himself insufficiently armed to defeat nature in this titanic battle.

A succession of firms and corporations tried to renew the struggle and in 1925 one of the last such organizations, an Ohio firm which formed the North Carolina Farms, failed and went into receivership. The entire property was sold to millionaire August Hecksher, who, without even seeing the land, spent a million and a half dollars during the first two and one-half years of his six years' ownership. During this time the pumping plant was repaired, ditches and canals cleared and crops were replanted. If determination was to be the key to success, August Hecksher would win where others had been defeated.

Five floating dredges edged forward for two years. Progress could be seen. Even a rainfall of 27 inches in three months failed to daunt the operations, and the drainage site remained in good shape. Promoters were confident of victory.

The almost unbelievable drainage system involved 100 miles of canals—some 100 feet wide. The pumping plant, the largest the world has ever known, had 4 centrifugal Corliss steam engine pumps, each having the astounding capacity

of 250,000 gallons of water per minute. If need be, 4 foilers with 3,000 horsepower could fill 8 miles of water barrels in one minute! Even with only two units operating, all canals could be pumped dry in one day. Hopes were high and it appeared to visiting engineers that even a cloudburst could be handled.

Full speed ahead. The town of New Holland (complete with streets, sewer system, and electric plant) was laid off by a noted Boston landscape architect. Highway construction included the building of heavy-duty bridges capable of supporting the anticipated truck travel. An entire railroad was transplanted from another North Carolina county.

Fifty-one tractors, all headlight-equipped, worked 13 hours a day planting thousands of acres of soybeans, buckwheat, popcorn, barley, celery, rye and oats—all apparently under the most ideal conditions. Harvest time arrived. Several inches of water sloshed over the ripe crops; the great pumps refused to work. Bumper yields stayed in the fields and rotted. Nine hundred bushels of potatoes to the acre (nine times the average for the rest of the state) were devoured by grasshoppers and army worms. Knee-deep mud and slime brought harvest in Mattamuskeet to a halt. Thus, in 1933, this struggle between man and nature finally came to a quiet end here in the mud at Mattamuskeet.

Under an original agreement, the land was to revert to state ownership if draining operations ceased permanently. The way was now clear for the sale of Mattamuskeet to the Federal Government. A new era began for "Dry Dust."

The U. S. Fish and Wildlife Service set up the Mattamuskeet National Waterfowl Refuge and the area became the winter home for the greatest number of Canada geese and whistling swans visiting any refuge. Tourists enjoy seeing from 100,000 to 150,000 geese and nearly 15,000 swans annually. These majestic birds seem to be everywhere and can be observed and photographed at leisure. Pintails, American widgeon and black ducks enliven the waterfowl scene with up to 100,000 birds each fall.

An area of about 10,000 acres of the refuge is cooperatively operated as a public hunting ground by the U .S. Fish and Wildlife Service and the North Carolina Wildlife Resources Commission. Licensed guides and controlled blinds make the famous goose shooting almost unequaled anywhere. To the seasoned goose hunter, the name "Mattamuskeet" sets off that magic feeling known only to the shotgun addict. Scenes of frosty grey-green dawns with gabbling geese swinging toward rushcovered blinds pass before the mind's eye and the hunting fever takes hold.

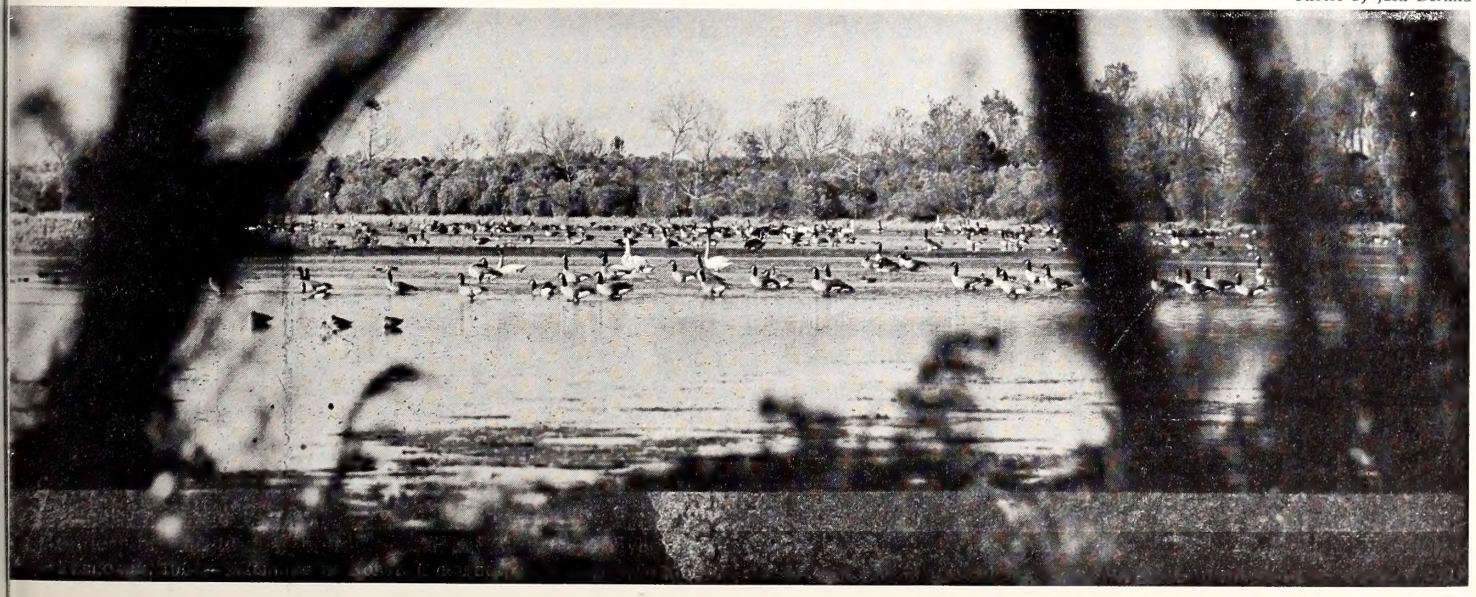
This is the old pumping station which once rumbled with the sound of giant pumps. Now it is a lodge housing the hunters.

Even to those who never expect to pull a trigger with the big grey bird in the sights, even to those who simply enjoy seeing wildlife in its own majestic natural setting, Mattamuskeet is a unique experience. Deer are numerous in the swamps and fields surrounding the lake; shore birds shuttle back and forth from the nearby sounds—this is a wildlife wonderland for the serious naturalist or the weekend tourist.

Although the real king here is the Canada goose, largemouth bass, white perch, and bluegills may steal some of the visitor's time. The canals are extremely popular with the anglers and from early spring till fall, fishing (it is not permitted during the hunting season) is good. The little hotel and the lodge are crowded during the hunting season and more and more admirers of the Canada goose are coming to Mattamuskeet during February and March. Try a late winter trip here; you'll enjoy this realm of the Canada goose.

Canada geese, swans, and several species of ducks rest near a Mattamuskeet shoreline. They remain on constant alert.

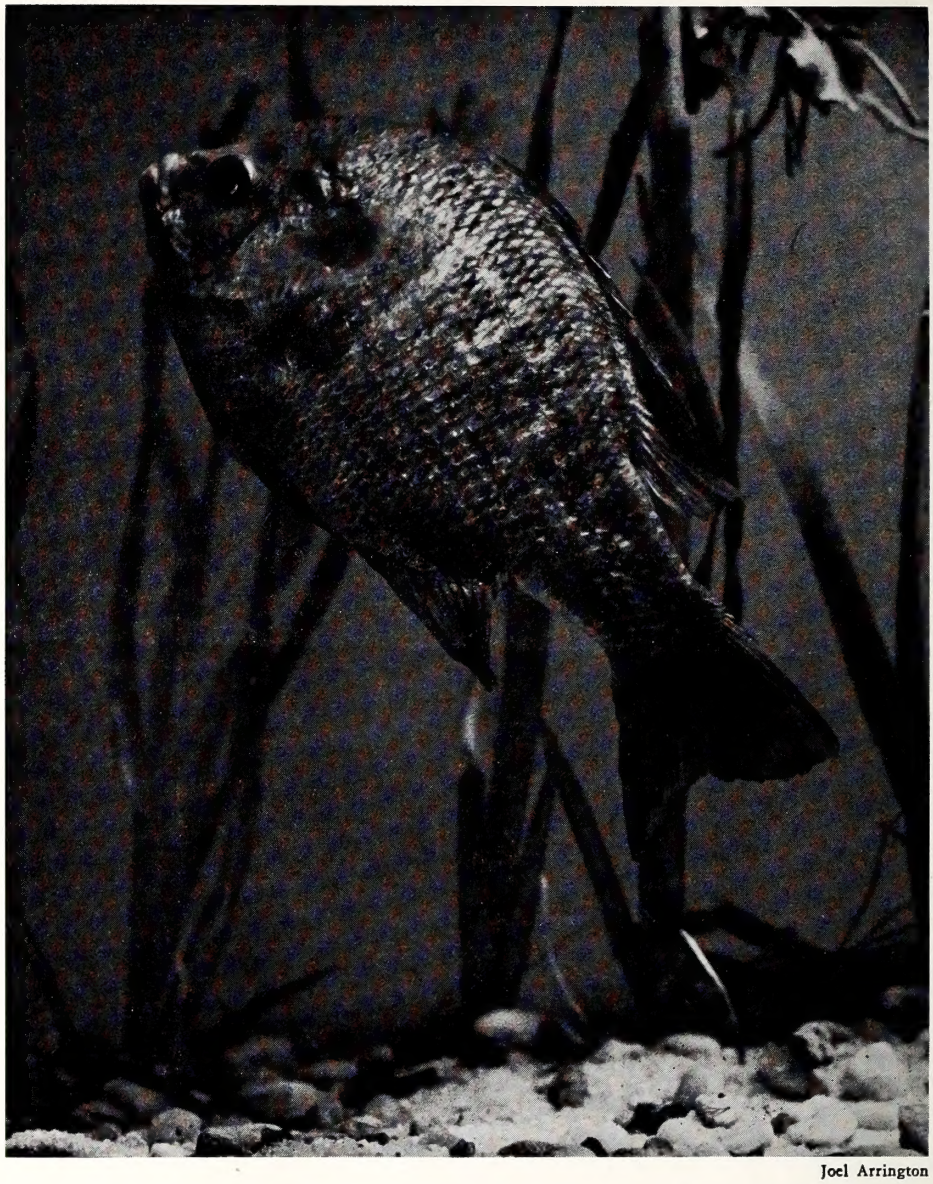
Photos by Jack Dermid



Fish and Oxygen

A CONSERVATION PRIMER

By Joel Arrington



Joel Arrington

FOR a fish to survive, he must have an adequate supply of oxygen. What is oxygen? Where does it come from? How does the fish get it into his body? Why does the fish need oxygen, anyway? These, and other questions, must be answered if we are to understand how to have more fish and better fishing.

Oxygen is a gas that is important to fish and all other animals. Man could not live very long without oxygen, and neither can a fish. Oxygen is present in large amounts in the air around the earth. It lies in a layer many miles thick over the earth's surface. This layer is called the atmosphere.

Animals which live on the land get their oxygen directly from the air by breathing it into the lungs, absorbing the oxygen and blowing out the waste product, carbon dioxide. The oxygen is carried by the blood from the lungs to the parts of the body where it is needed.

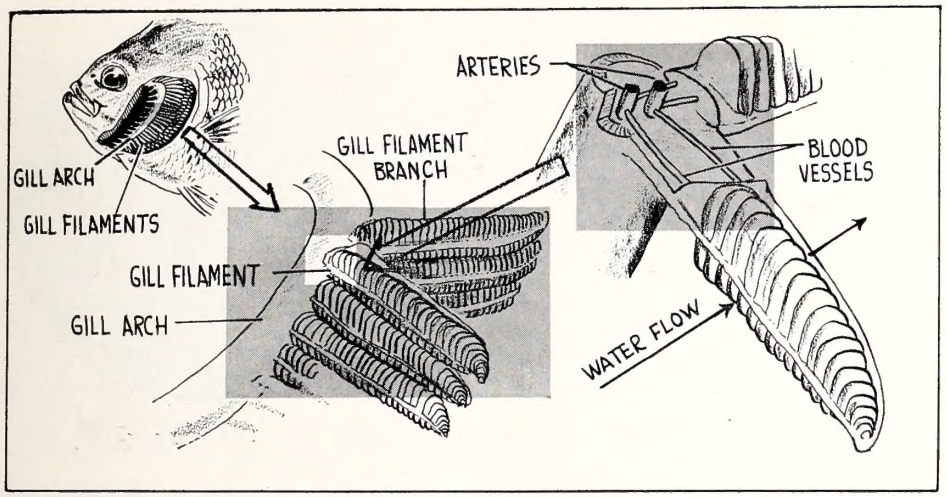
Fish cannot take oxygen from the air because they do not have lungs. They must get their oxygen another way. So fish take their oxygen from the water. They do this with their gills. There is not as much oxygen in the water as there is in air, but fish do not need as much oxygen as warm-blooded animals.

A fish's gills are found in the back part of the head under the gill covers which protect them. They consist of many filaments full of tiny blood-vessels. Gills are red in color because there is much blood in them and because the blood is near the surface of the skin. When a fish breaths it "inhales" through its mouth fresh water which has oxygen in it and passes the water over and around the gills and then out large slits behind the gill covers.

When the water comes in contact with the gills, some of the oxygen in the water moves through the thin covering of the gill filaments and is picked up by the blood. Then the blood takes the oxygen to all parts of the fish's body.

A fish needs oxygen for the production of energy, just as a fire needs oxygen to produce heat energy. When a fire has its oxygen taken away, it cannot make energy and it dies. A fish also uses oxygen to provide the energy to rebuild worn-out parts. For a fire to burn, it must have fuel. For a fish to live, it too must have fuel. A fish's fuel is its food. When fuel combines with oxygen, it burns, and gives off energy. When a fish takes food into its stomach, it is digested by the fluids there and is absorbed into the blood stream in the sides of the digestive tract. The blood carries the food to the parts of the body where it is needed for energy and for building body tissue.

Remember, the blood also carries the oxygen from the gills to all parts of the body. So you have food and oxygen together in the blood. A fish burns food in its body and makes energy just as a fire burns fuel to make energy. This burning goes on in the little cells which make up the fish's body. When all the fuel is burned up in a cell, it must have some more fuel. The blood brings the fuel to the cells and brings the oxygen along



The drawing above shows a fish's gill construction. Left, a cut-away view of the gills; center, a closer look at the filaments; and on the right, the fine details of design.

with it so that they can combine in the cell to produce energy. The fish uses that energy to gather more food which is converted, with the use of oxygen, to more energy. This life cycle must not be broken if the fish is to continue to live.

When the food and oxygen dissolved in the blood combine in the cells, the carbon in the food combines with the oxygen to make carbon dioxide, a waste product which must be removed. The carbon dioxide is then taken up by the blood and carried to the gills. At that point, the carbon dioxide comes close to the surface of the gill filaments. Since there is more carbon dioxide in the blood than in the water, some of the carbon dioxide is absorbed by the water. Since there is more oxygen in the water than in the blood, the blood picks up some of the oxygen. This exchange, then, is two ways—oxygen goes into the blood and carbon dioxide goes into the water.

You might wonder how oxygen gets into the water. Most of the oxygen in water comes from the air. Air and water meet at the surface of a body of water and this is where the transfer takes place. Tests have shown that there is almost always more oxygen near the surface of a body of water than at the bottom. In a swift stream, bubbles of air are carried under water where they dissolve. In some cases, deep waters of reservoirs may have no oxygen during mid-summer. Streams usually have more oxygen in them than still lakes and ponds. Waterfalls help add oxygen to a stream by violently stirring in the oxygen from the air.

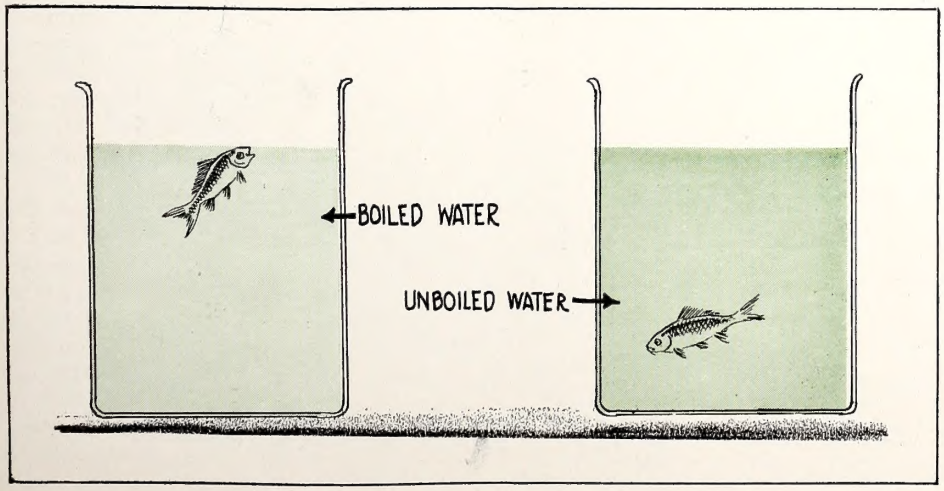
There is another important way for oxygen to get into water. Place some green pond plants into a glass of water and put it in the sunlight. If you watch it closely, you will see some tiny bubbles begin to appear on the leaves and move upward from the plant. These are bubbles of oxygen. All green plants give off oxygen while they are making sugar in sunlight. Much of the oxygen produced by aquatic green plants dissolves in the water.

So there are two ways for oxygen to get into the water—from the air and from plants. But how does oxygen get out of water? One way is by heating the water. You can try an experiment. Boil some water for several minutes, then let it cool and place it in a large jar. Fill another jar with cold water from the faucet. Place a goldfish in each of the jars of water. The fish in the water that has been heated and cooled will come to the surface for oxygen because there is not enough dissolved in the water. But the other goldfish will be happy and comfortable without coming to the top. Do not leave the goldfish in the heated and cooled water for he will soon die. We know then that heat is one thing that removes oxygen from water.

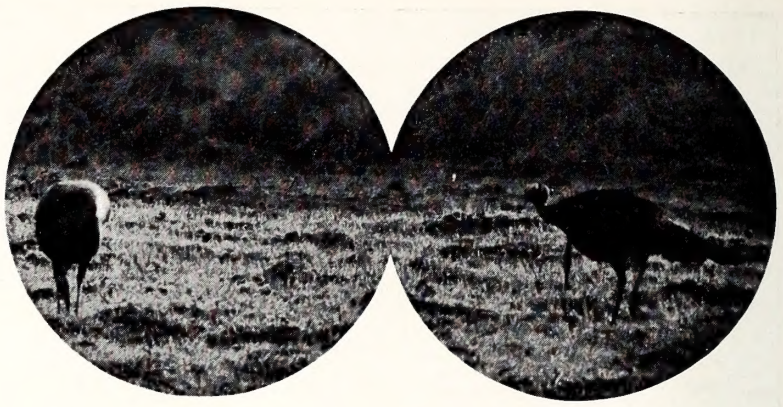
Animals that live in water also use up the oxygen there. If there are too many animals in the water they will use up so much of the oxygen that they all die. Some kinds of bacteria use up large amounts of oxygen in the water too. The bacteria that cause dead things to decay use up much oxygen because sometimes there is a great number of them in the water. There may be countless millions of bacteria in streams where sewage and garbage are dumped and poor water quality can result. Now we know what characteristics a stream must have for it to be a good place for a fish to live. It must have plenty of oxygen in it, plenty of food, and not too many animals living in it. Often some green plants also will help produce oxygen for the fish to breath; and the water must not be spoiled by having garbage or other pollution dumped into it.

A piece of green aquatic vegetation, when placed in a container of water in the sunlight, will soon give off bubbles of oxygen.

The goldfish in the container on the left is forced to come to the surface for oxygen because it has been boiled out of the water. The fish on the right is comfortable in water which has not been boiled. This illustrates that heat drives oxygen from water.



Old Tom, A Wise Bird



by Sam Poole
District Game Biologist

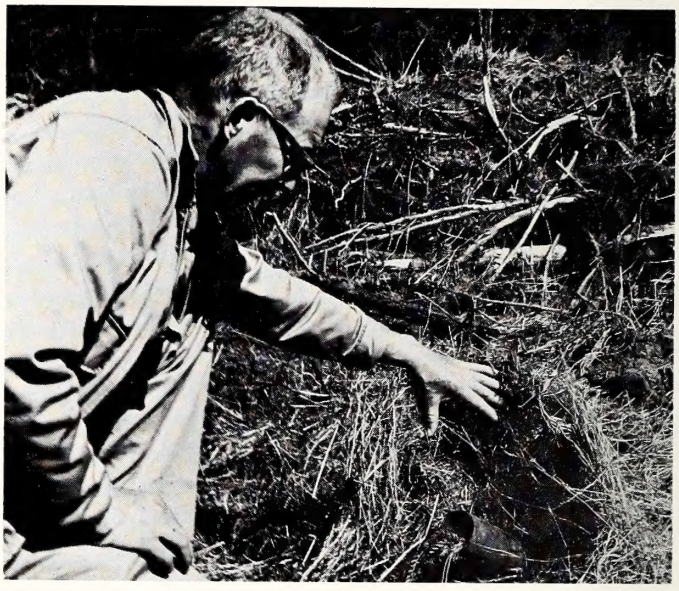
IT was a cold drizzling rain, but our assignment was to trap turkeys. Permission had been granted by the Camp Lejeune authorities to take a limited number of wild turkeys for restocking some of our management areas. The district one biologist and I were sitting in a turkey blind trying to protect ourselves from the elements as best we could, but the myrtle-bush leaves gave little shelter. Then we saw something. Was it a deer? No, the grayish-blue object was the head and part of the neck of a wild turkey gobbler. This old bird was coming to our bait of yellow corn. The cold drizzling rain was forgotten as we watched at twenty yards this old fellow strut and gobble for his mate.

This strutting and calling continued for ten minutes. Then slowly and cautiously he began to approach the camouflaged trapping site. Our cannon type trap had been previously set with much care and patience. We believed this set to be perfect in every detail, well camouflaged and ready to fire by a twist of the generator handle. The current from the generator travels by connecting wire to the powder charge in three cannons. This charge explodes and sends projectiles up and out with a net trailing to drop over and ensnare the wild turkeys until we can catch them by hand. Later we were to band and crate them for shipment to a management area for restocking purposes.

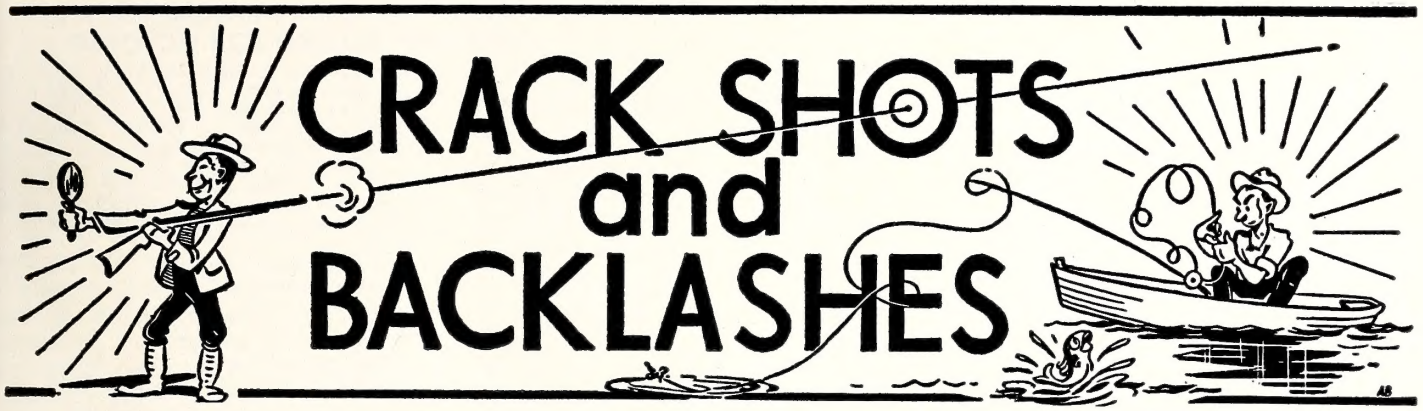
As old Tom approached he stopped, strutted and gobbled every ten yards. Then suddenly he stopped right beside our well-hidden net. He stretched his neck and looked over the situation. Would he cross over into the net drop zone? No, he had detected something wrong, so he walked up and down five or six times looking over the net area, but never once putting a foot across into the net drop zone. Satisfied something was wrong—we still didn't know what—he walked directly to our blind and stretched his long neck to look in at us. We didn't move a muscle, frozen in anticipation of his next move. Old Tom simply said, "put, put" and slowly walked away safe and free from our best-laid plans. Two minutes later at the south end of our blind another "put, put" was heard. This time it was a hen that had come to the calling of old Tom, and as far as we know this pair of turkeys are living happily ever after, raising smart little turkeys to increase the population of the base.

Three days later, two not-so-wise hens fell prey to our cannon-trapping techniques and are now sharing, with a previously transported gobbler, the task of repopulating the Daniel Boone Wildlife Management Area near Morganton with more of their kind.

Photos by Luther Partin



Some of North Carolina's suitable wild turkey range has practically no birds, while a few spots have plenty. The trick is to trap these wise birds where brood stock is available and transport them to the areas where they are needed. Above, an experienced trapper examines the mortar which will fire a net-carrying projectile over baited birds. This can be a frustrating business and more often than not, the photo below is the only reward for the long wait in the trapping blind.



DEPARTMENT OF LETTERS TO THE EDITORS, FIELD NOTES, AND ITEMS OF INTEREST

Conducted By Rod Amundson

Since the terrible, tragic assassination of President Kennedy last November a number of pundits, politicians, and preachers have gotten into print or on the air to express the view that restricting the sale and ownership of firearms will prevent, or at least reduce crimes of violence.

There is no question of the sincerity of the people who hold this view, or of their right to express it. For the past several years there has been an increasing rumble in legislative halls of proposed laws to require the registration of all firearms. Some proposed legislation has a degree of merit. Other proposals are reactionary, if not downright radical.

Federal, state and municipal laws already rigidly restrict the ownership of many types of guns, not to mention knives, brass knuckles, black jacks, and other types of lethal weapons. Despite these restrictions the national crime rate continues to increase. Sawed-off shotguns have been outlawed for years, as have automatic weapons for other than military or security use.

The gun that killed President Kennedy was a foreign-made military type rifle with a telescope sight, purchased from a mail order house. Suppose the sale of such guns in such manner had been prohibited. Would that have prevented the assassin from committing the crime? Or some other assassin from using some other weapon —a bomb or a bolt from a crossbow?

The American right to bear arms is as old as our constitution. What would have been the outcome of the battles of Lexington and Concord, or for that matter the American Revolution, if our forefathers had not had the privilege of hanging their muzzleloading rifles over the mantle?

Hasty or ill-considered legislation could be unjust or even dangerous. It could levy discriminatory or punitive taxes on the purchase, ownership or use of rifles, shotguns, pistols, or revolvers. Licensing the possession or purchase of such guns would vest arbitary power to say who may and who may not own a gun in the hands of an appointed or elected official. Legislation should be concentrated on the illegal use, not the ownership of sporting arms.

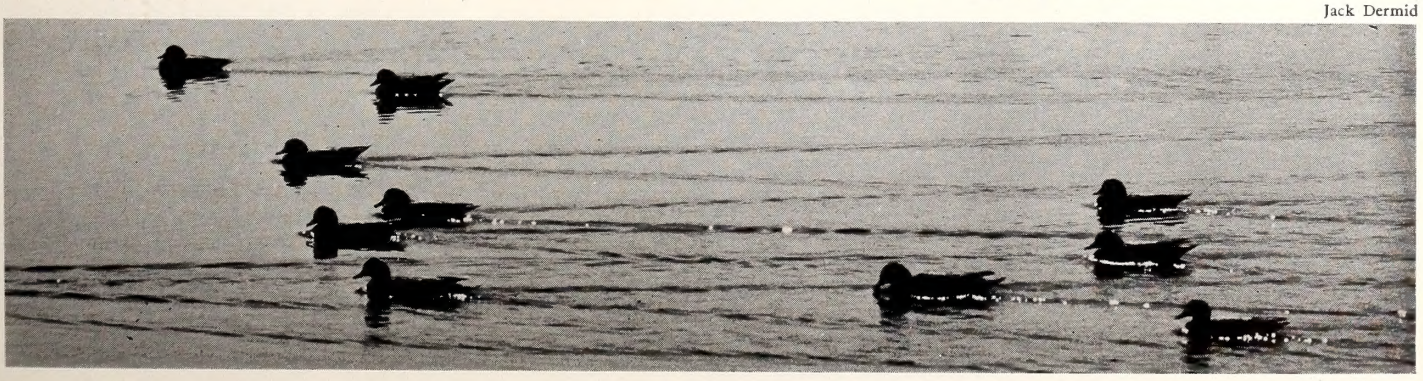
The universal registration of firearms would unquestionably exert a certain degree of control over illegal use; but would it not also create a situation whereby *all weapons* could be seized by unscrupulous political authority? Registration of guns will not keep them out of the hands of criminals, and few people seriously believe that it could.

There is a case to be made for restricting the ownership of guns among certain individuals—fugitives from justice, persons convicted of a crime of violence, mental incompetents, drug addicts, and so on. Perhaps additional penalties should be added for the use of dangerous weapons in the commission of a crime. Other specific restrictions should be considered, but extreme thought must be given regarding the degree and scope of these restrictions.

Perhaps wiser heads than yours or mine will be needed to determine whether further restriction to the ownership and use of firearms is desirable or necessary. If such restriction is needed, let it be done in cool consideration, not in a moment of national indignation!

The use of sporting firearms in America is as old as the first landing of the Pilgrims. Any restrictions on the sale, possession or use of these weapons need careful, unemotional examination.

Jack Dermid



KNOW YOUR PROTECTOR

Marvin Lester Ward

Marvin L. Ward, Wildlife Protector in Durham County, was born September 29, 1912. He is the son of Mr. and Mrs. W. B. Ward of Route 1, Morrisville, North Carolina. He attended Lowe's Grove High School in Durham County.

Ward has been stationed in Durham County since November 1, 1949. Since his initial employment, Ward has attended six in-service training schools.

Ward is a Mason and served four years and eight months in the Army during World War II.

Ward is married to the former Virginia Stone of Nelson, North Carolina, and they have one son, Lester. The Ward's reside at Nelson, North Carolina.

DIVISION ENFORCEMENT RECORD FOR OCTOBER

HUNTING & FISHING:	
Persons checked	27,550
Total prosecutions	629
Total convictions	608
Total cases not guilty	15
Total cases nol prossed	5
Total cases dismissed	1
Total fines collected	$5,992.75
Total costs collected	$4,585.60
BOATING:	
Boats checked	476
Total prosecutions	56
Total convictions	52
Total cases not guilty	0
Total cases nol prossed	4
Total fines collected	$63.50
Total costs collected	$401.15

All fines and any arrest or witness fees are paid into the school funds of the counties in which the violations occurred, and no part of the fines or costs collected are paid to the North Carolina Wildlife Resources Commission or its personnel.

Rabbit Turnover

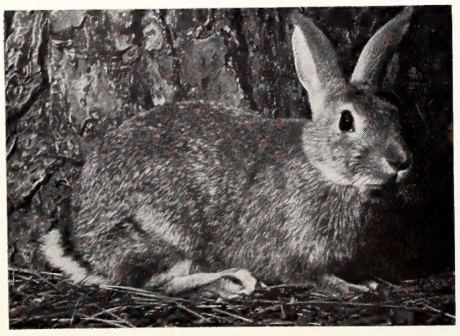
DEAR SIRS: I am retired and am now living on my 500 acre farm, near Murphy. I have some dandy beagle hounds but find very, very few rabbits for them to run. I was told that a few years ago they were plentiful. I am reconsidering restocking a portion of my farm with rabbits, and naturally desire to restock with a good breed, but I know so little about the characteristics of the different breeds, I do not know which to use. I want them for running purposes, and have some good rabbit races. I enjoy just hearing the dogs run.

If you know of a good breed that you will recommend I would appreciate it, and if your choice is our native Cottontail, do you know where I could buy a few does and a buck or two for breeding stock? I have had a couple of breeds recommended, but I know nothing at all about them except I've heard they are large and could really run. They may have undesirable characteristics which I would not want.

One of the breeds mentioned is the San Juan and the other is called the "Cane-breaker" I think, from South Georgia. I certainly do not want a breed that would be undesirable in any way such as a nuisance or pest.

I've heard that some of the large breeds can "eat as much as a horse" and would be very destructive, especially to some crops, such as soya beans, etc. Any advice or information you care to give me will be greatly appreciated. A. E. HARSHAW, MURPHY.

This is a cross-bred cottontail with some of the characteristics of the San Juan.



Dear Mr. Harshaw:

Your letter was referred to me for reply and I will try to answer you to the best of my ability.

It is now generally accepted that restocking is not the answer to small game problems. Their capacity to reproduce will usually furnish more numbers than the land can support. The average piece of land will normally have all the small game species needed to use the food and cover that is available.

Another thing to consider, from the restocking viewpoint, is the natural wildness that is lost by pen-reared game in contact with humans. On being released, they have little fear of humans, have difficulty in obtaining their food, and have little instinct to seek cover, making them easy prey for any cat or dog that comes along. And there are plenty of these predatory household pets roaming the fields and woods these days.

Even if you could find good, wild cottontail breeding stock, they are very difficult to raise in confinement, with the doe often killing the young or refusing to feed them, not to mention the problems involved in getting them to breed in the first place.

The San Juan you mentioned has a reputation for garden and crop damage, if you overcome the problems already mentioned. The occurrence of tularemia is relatively high in sections where imported rabbits have been released, in fact, most of the outbreaks have been traced to restocking attempts.

The solution agreed upon by professional game workers is the restoration of habitat—providing a year-round supply of food and shelter for a larger population —and let native wild species take care of the stocking. This can be accomplished largely with plants and seeds available free of charge from the Wildlife Commission. These plants and seeds include: multiflora rose for cover; shrub lespedezas for food; sericea lespedeza for food and cover; annual lespedezas and annual food mixtures for a one-year supply of food. In addition to these measures, people with your type of problem have made brush piles and put small haystacks of good leafy legumes in or near open woods, small growth along streams or ponds, etc.

If you will contact the wildlife biologist in your district, Mr. John Hardister, P. O. Box 411, Lake Junaluska, he will look over your situation and should be able to make some helpful suggestions. LUTHER PARTIN, WILDLIFE EDUCATION REPRESENTATIVE.

Backlash

DEAR SIRS: After reading your feature "Waterfowl Hunting" I was disappointed to discover you were unaware of Knotts Island as a hunter's paradise. You listed several communities in and on Currituck Sound, but neglected Knotts Island.

May I inform you that Knotts Island is

indeed a sportsman's paradise. We have very good waterfowl hunting in the winter and excellent fishing in the spring and summer, bass being the most sought-after fish. There are homes here that cater to both waterfowl and fishing parties, with the very best guides available anywhere. Hunting is done from stationary blinds.

We are located on Currituck Sound, in the northeast corner of North Carolina, on the North Carolina-Virginia line. We have a ferry leaving Currituck Courthouse, in Currituck, making five round trips each day of the week. We also have good highways leading to our Island.

We have sportsmen from all over the eastern United States visiting us each year. Once a sportsman has been here, he always returns. RALPH W. LEWARD, KNOTTS ISLAND

Sorry about the oversight. Knotts Island is tops in waterfowl hunting.—Ed.

Hold'er Newt!

DEAR SIRS: You have a great magazine, but that is not what I am writing to tell about.

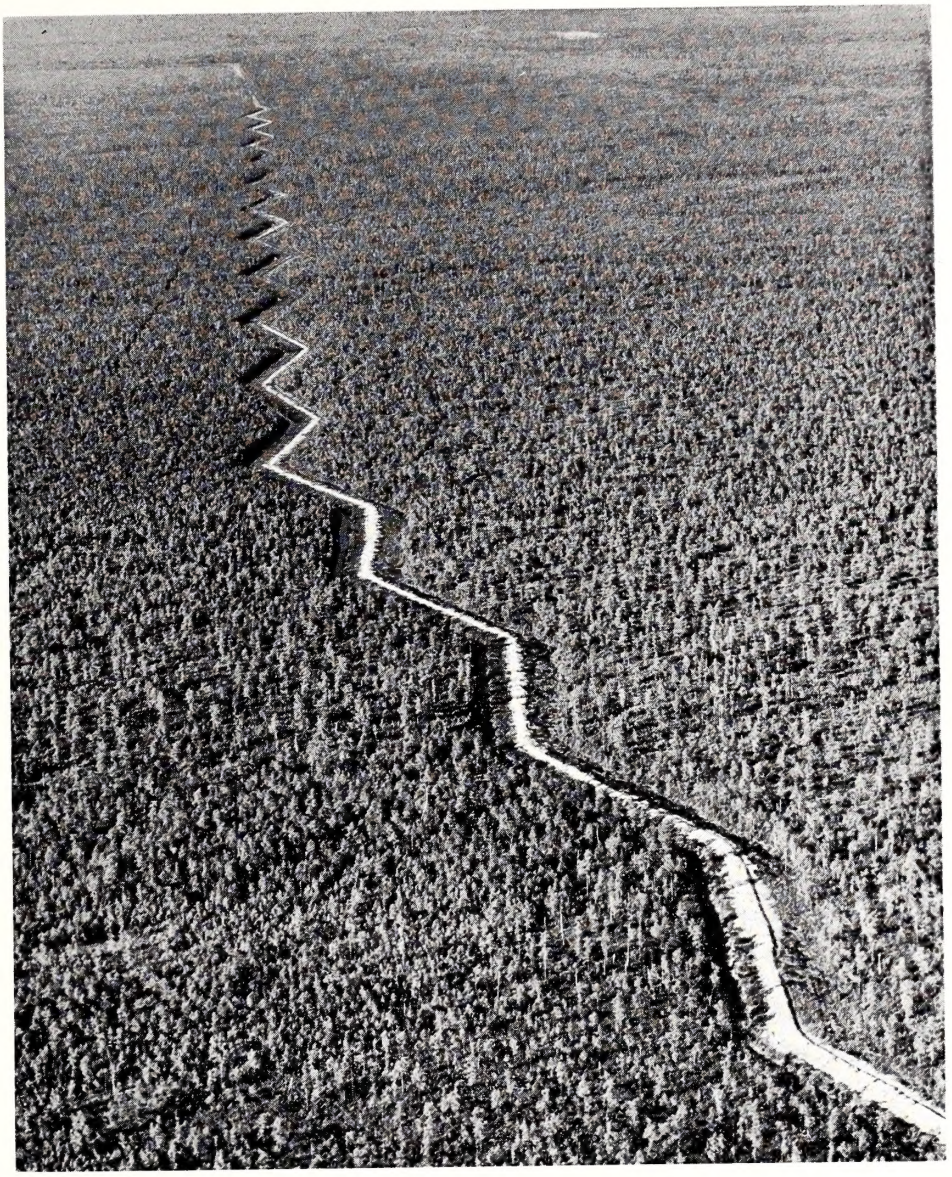
Today I was getting some grass for my fish bowl out of a ditch that empties into Currituck Sound. Walking away from the ditch I felt something wiggle in my hand. I parted the grass and found what I thought was a lizard, but it isn't. I don't know what it is. Here is a description:

Length, approximately 3½"
Tail like a tadpole
Head like a lizard or snake

Swims extremely fast using its tail with four legs pulled back to itself. Looks like a babv alligator from top view. Walks on four legs like a lizard; swims like an otter; top half of body tan in color, orange dots with black ring around them. Bottom half is orange or yellow with black dots. You can see a bone structure running down its back.

I have this thing in a fish bowl so I can watch him. Could you tell me what I have? If at any time you would like to see this creature or examine him you may. JOHN H. SNOWDEN, JR., MAPLE

From the detailed description we deducted that the "catch" is the eastern newt, a salamander of the amphibian group with the scientific handle *Diemictylus viridescens viridescens*. These are found in shallow, stagnant pools in most of our state, and make excellent aquarium pets.—Ed.



Who Knows This One?

Here's another one to test your detective powers. This time we know the answer. Clues: It is in North Carolina and has to do with wildlife in some way. But where is it and what is it, and why is it? There won't be any prizes, but take a guess.

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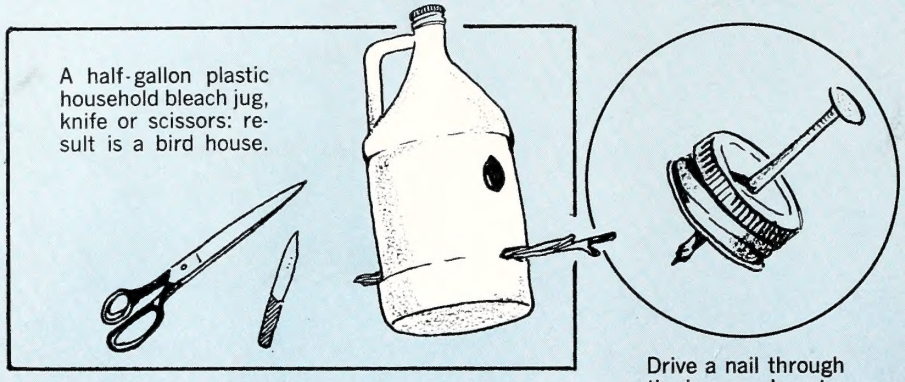
PLASTIC JUGS FOR THE BIRDS

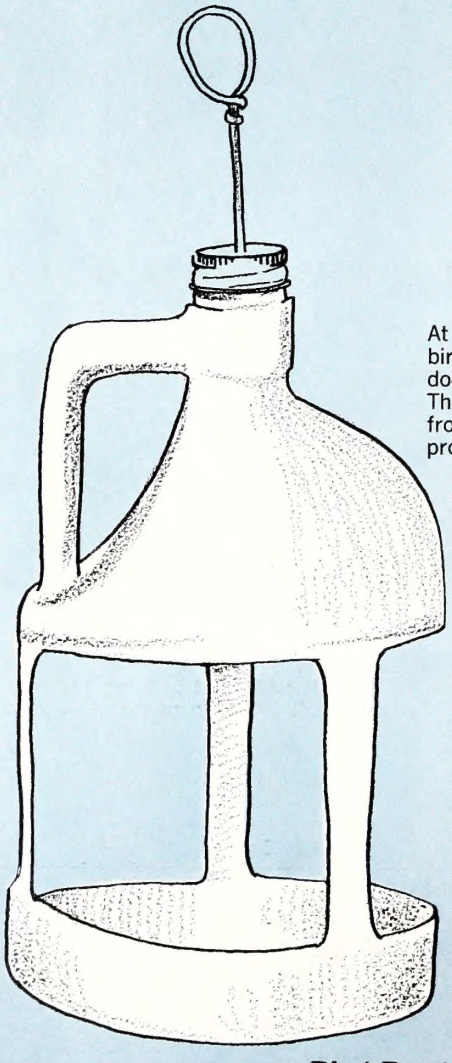
A half-gallon plastic household bleach jug, knife or scissors: result is a bird house.



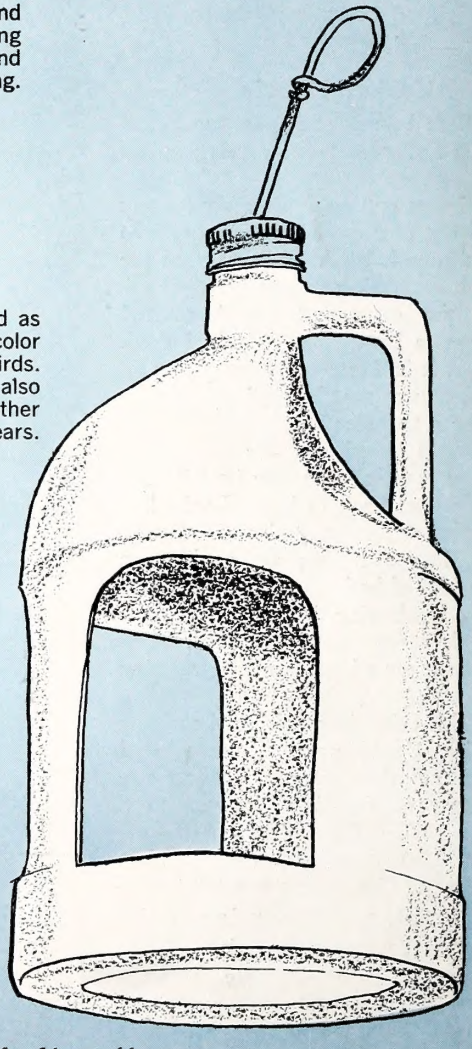
Be sure to carefully remove all the bleach (do not get it on clothing). Cut a hole (trace around a quarter) with a sharp knife or scissors in about the position shown. Some birds like a perch, some don't. Add a bit of stick through the lower part of the jug if desired.

Drive a nail through the jug cap. Insert a heavy wire and bend to prevent pulling out. Loop other end for tree fastening.

At left is a gallon jug designed as bird feeder. The pure white color doesn't seem to bother the birds. The robin nest house at right is also from the large jug and is weather proof and should last for years.



Bird Feeder



Robin Nest House

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Wildlife in north carolina

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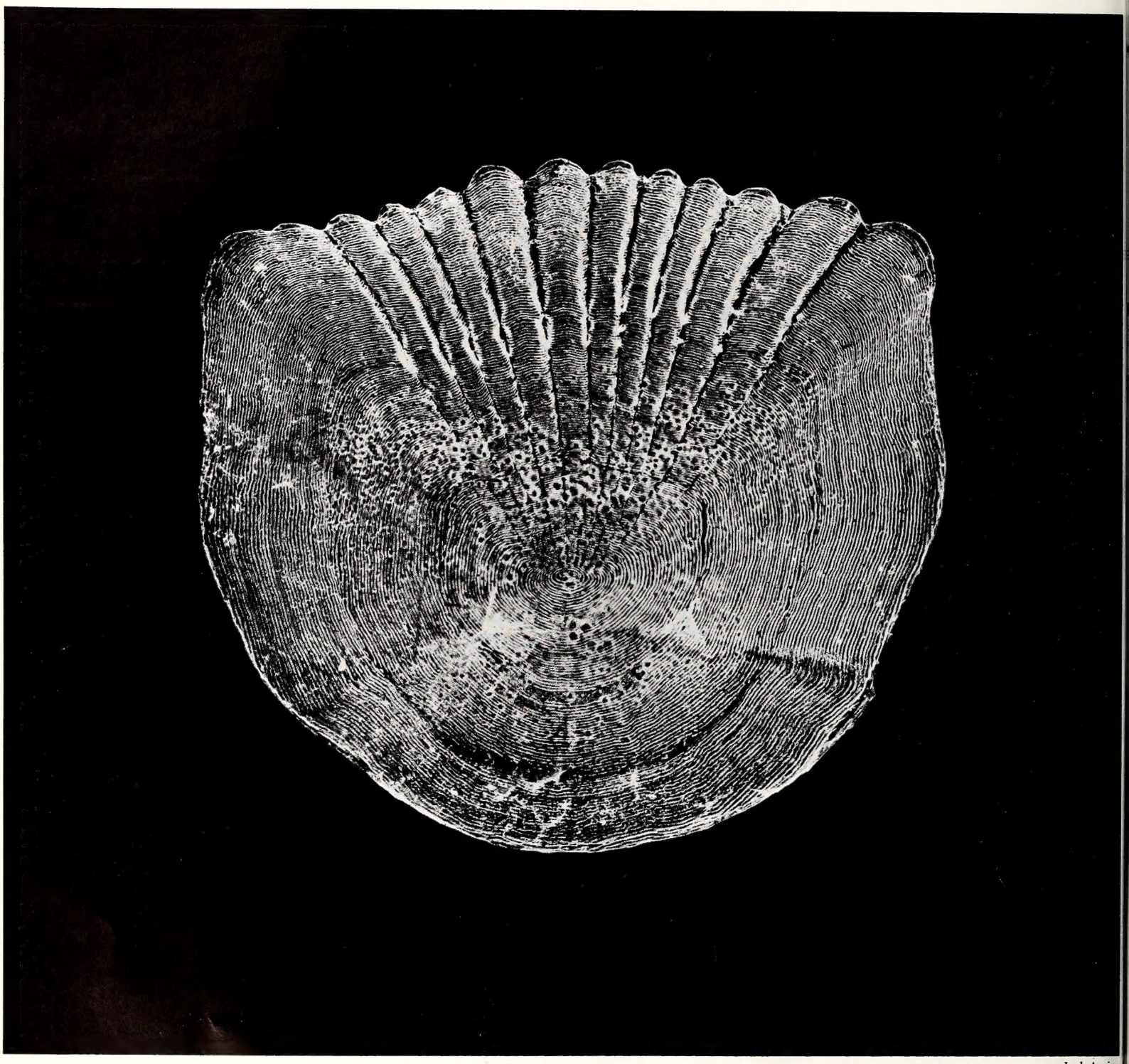
march 1964



Joel Arrin

FISH STORY

This is a photogram of a fish scale. The trained eye can read quite a fish story from it. The fishery biologist could tell us that the fish from which the scale was taken is just completing its third year; that it grew fairly well its first year, and even better during its second year, and about the same in its third year of life. The technician will compare the fish's total length with this determined age to arrive at growth rate. This is the scale of a white crappie.

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North Carolina Wildlife Resources Commission

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Wildlife in north carolina

The official publication of the NORTH CAROLINA WILDLIFE RESOURCES COMMISSION, Raleigh. A monthly magazine devoted to the protection and restoration of our wildlife resources and to the improvement of hunting and fishing in North Carolina.

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COVER

Most song birds are worth their weight in ten-dollar bills just as insect and weed seed eaters alone. But the bluebird adds beauty and a bit of melody to the list of accomplishments. It's a more pleasant backyard that has a pair of these colorful birds fliting about. Bluebird nesting sites are in short supply and it won't be long until the prospective parents will be looking for housing. If you haven't already, put up a bluebird house now. Transparency by Karl Maslowski.

WILDLIFE IN NORTH CAROLINA recognizes the need for close cooperation between State and Federal conservation agencies and the people who hunt and fish—to bring about a restoration of our renewable resources. The Editor gratefully receives for publication news items articles and photographs dealing with the North Carolina out-of-doors but reserves the right to reject materials submitted. Full credit is given for all materials published.

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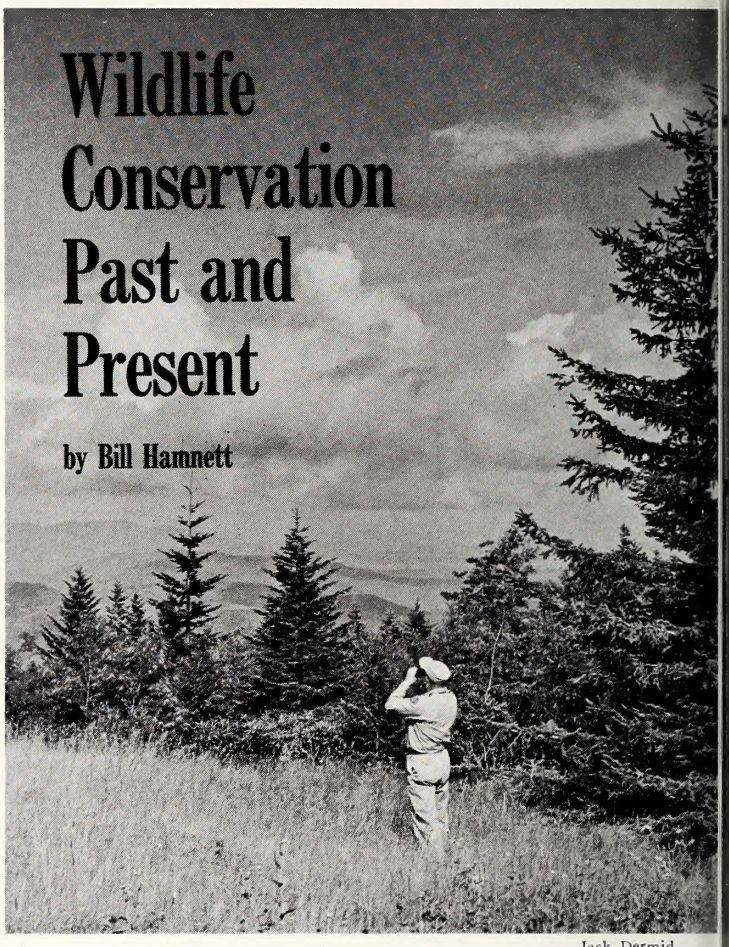
Wildlife Conservation Past and Present

by Bill Hamnett



Jack Dermid

We can look into the past of wildlife conservation and build a stronger future. Here are some of the highlights of this program.

IN the Bible, Deuteronomy, Chapter XXII, verses 6 and 7, we find the first type of conservation law which in effect says that the young or eggs of a bird may be taken from the nest, but the female must be spared.

Prior to the Norman Conquest of England in 1066, there was a law that prohibited hunting on Sundays, perhaps the first real game law. Later, monks were forbidden to hunt in the woods with dogs; and when the King gave notice he would hunt on a certain day, no one else in that immediate territory, noble or otherwise, was allowed to hunt. Following the Norman Conquest, hunting was restricted to the nobility and heavy penalties were imposed, thus giving rise to groups of the Robin Hood type who enjoyed the chase or the hunt.

For the next 600 years corrections and improvements in the laws and human relations were made, so that as far back as 300 years ago we see really the beginning of official control and conservation of wildlife. Most of these ideas were brought to this country by the colonists from England. These ideas were: non-destruction of property when hunting on another's property; the requiring of permission to hunt on another's land; the prohibition of hunting at night; and closed seasons for game.

The protection of game itself, rather than the grant of exclusive game rights to certain exalted personages, has from the first been the principle on which the game laws of the United States have been based. In 1603, the Plymouth Colony declared hunting, fishing, and fowling, (duck shooting) to be free, except on certain private property, but that wild game and fish were not to be molested during their reproductive seasons.

As the pioneers began their movements to the south and west from the early settlements, wild game was their sustenance and for a long period necessity called for killing of such game as was needed throughout the year. Such killing, however, had little effect in reducing the supply. The wildlife was in such bountiful supply that no one dreamed or foresaw that it would ever be exhausted.

The bison, our buffalo, gave way to the farmer and cattlemen on the western plains. Yet, today, there are thousands more than were present in 1905. The millions of passenger pigeons were wiped out before we knew what was taking place. The last bird died at the Cincinnati Zoo in 1914.

States Rights was a rallying cry and the administration of the game and other natural resources was left in the hands of the individual states, with disastrous results.

It is hard to find a starting point for wildlife conservation in North Carolina. Up until fairly recent times, our people had been so accustomed to the belief in local self-government, with the preservation of our wildlife resources handled by each of our counties, that very few state-wide laws were drafted.

The mention of some early laws may give us an insight into what was to come. The need for deer protection was recognized as early as 1745. In 1784, the taking of quail, dove, robin, lark, mockingbird, and wild turkey was illegal from April 1 to October 15. In 1876, prohibition of shipping quail out of the state became law. The local laws were many and diverse. By 1920 North Carolina had on its statute books one-fourth of all the game laws of all the states in the Union with perhaps as low a rate of enforcement as any.

In 1903, through the guidance, enthusiasm and devotion of Mr. T. Gilbert Pearson, the North Carolina General Assembly provided for the protection of song birds and placed the administration of the local game laws then on the statute books under the North Carolina Audubon Society, of which Pearson was the executive officer. This was the first step, although by county choice, toward recognizing the principle of the State control of wildlife resources. This organization lasted until 1927 and these intervening years were fraught with many obstacles, especially the public apathy on this matter of game and bird protection.

In 1913, a bill was drafted and submitted to the General Assembly, and to subsequent Assemblies until enacted in 1927, embodying the belief that state-wide control of wildlife resources was imperative. The new state-wide program was administered by a newly created state agency, the Department of Conservation and Development, with a division of Game and a division of Fish. These two divisions were combined in 1935 into the Division of Game and Inland Fisheries. In the Department of Conservation and Development, during the 20 year period from 1927 to 1947, is found the beginning of the program of development and management of wildlife habitats and an educational program designed to show the need for wildlife conservation and public cooperation in the program.

In 1947, an Act was passed by the General Assembly creating a separate agency, the North Carolina Wildlife Resources Commission, to administer a sound program throughout the state which is embodied in the Commission's motto: MORE SPORT FOR MORE PEOPLE—EQUAL OPPORTUNITY FOR ALL.

(Continued on next page)

The Commission has a five-point program based on five essential activities of conservation which it believes gives emphasis and meaning to this motto. These are (1) Regulation, (2) Enforcement, (3) Education, (4) Research, 5) Management.

REGULATION Very few people fail to see the need for regulating the harvest of fish and game. Were everyone to hunt and fish as they please and when they please, there would soon be very little or nothing left for anyone seeking outdoor sport. Regulations are based on the laws of North Carolina which are passed by the Legislature. In setting its annual hunting, fishing, and trapping regulations, the Commission takes into consideration the following:

(a) Information received from field employees of the Wildlife Resources Commission as to the abundance of fish and game.

(b) The opinions of sportsmen who, at public hearings, or by other means, express their desires as to how and what regulations should be set up.

ENFORCEMENT It is obvious that the most wisely considered and equitably formed regulations would be utterly worthless without law enforcement. The Wildlife Commission spends more than one-third of its budget on the enforcement of laws designated to protect wildlife and to give everyone an equal chance to share in the hunting and fishing. Although enforcement does not actually add to the available supply of fish and game, it does protect the supply already on hand and insures that at the end of the season there is enough breeding stock left to produce a harvestable crop of fish and game for the following year.

EDUCATION Education includes both direct education of youth and adult groups, and the molding of public opinion. No matter how carefully the regulations are set up, no matter how well those regulations are enforced, the program of wildlife conservation—improving hunting and fishing—cannot succeed without the support of the people of North Carolina. It is the function of the Division of Education, with the cooperation of all other divisions, to bring more and more people to an awareness of the importance of the Wildlife Commission's program; and to influence these people to do their share in cooperating with the program.

RESEARCH It is very easy to spend the sportsmen's money unwisely in management practices if these practices are attempted without knowledge as to whether they are practical. It is the function of research to determine the cause of shortages of fish and game and to make specific recommendations for relieving such shortages. Determining the available supply of game and fish is one of the jobs of research. Another job is, for example, finding out why certain habitats are not producing fish and game as they should and making recommendations for correcting these conditions.

MANAGEMENT Management is the practical application of regulation, enforcement, and the findings of research. It includes the operation of fish hatcheries, the improvement of habitat for game and fish; and such specific activities as transplanting species from an area where they are over abundant to areas where a suitable habitat is present but where a desired species is entirely or almost absent. An example of this is the trapping and transplanting of deer and raccoon, and the introduction of new species of fish such as the walleye and white bass.

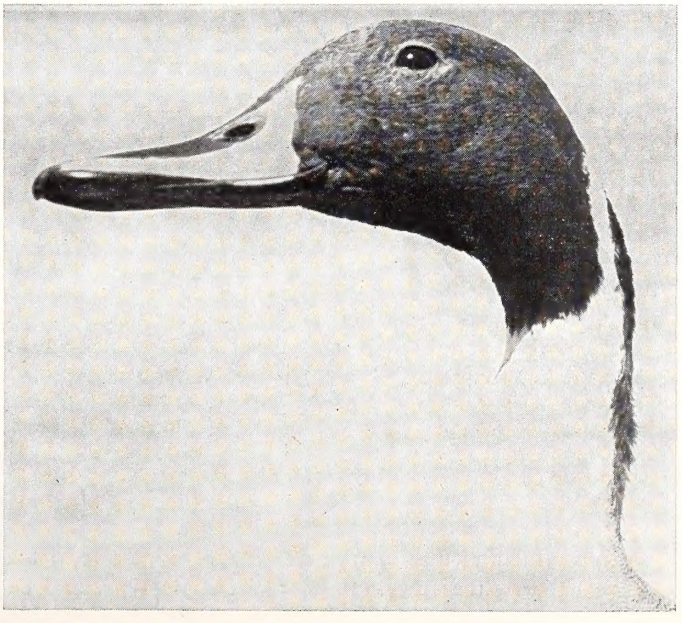
The North Carolina Wildlife Resources Commission functions as an agency of the State, but it derives no funds from general taxes. Its finances come entirely from the sale of hunting, fishing, trapping and guide licenses, boat registration fees and Federal Aid (excise tax paid by sportsmen in the purchase of arms, ammunition and fishing tackle.) These latter funds are proportionately redistributed back to the state by Congress for wildlife restoration use (education excluded).

Youngsters seem eager to learn the story of wildlife conservation. Here, some of tomorrow's conservationists are shown basic plant communities on the rocks of Camp Millstone near Hoffman.

Other state agencies also have a responsibility of administering conservation programs relative to natural resources. Within the Department of Conservation and Development are three divisions whose prime concern is management, maintenance and wise use of other natural resources. The Division of Forestry is associated with the forest areas of the state. The Division of Minerals encompasses the mineral resources with the specific assignment to see that the resources are properly used. The Division of State Parks has a program of perpetuating natural areas of our state for public use.

A very important state agency is the Department of Water Resources which has a vital challenge to keep the public informed about its resources, and the proper use, maintenance and development of water which is so critical to our well-being and economic life. Especially is the work of the Water Resources Division of State Stream Sanitation Committee vital to human and natural resources of our state. All life depends on water, and the cleaner the better!

Waterfowl, like this pintail, are in trouble. It will take the continued efforts of all conservationists to bring them back.



Hunting the BLACK BANDITS

by Grady L. Barnes
Wildlife Refuge Supervisor

THE middle of February has come and gone again. To many nimrods and scattergun fiends this brings a period of joy and sadness; joy in thinking back over the past memories of the hunting season, and sadness in parting company with favorite guns for another season. The passing of mid-February ushers in the "dark ages"—the time between the last day of the hunting season and the first warm rays of sunlight that cause fishing fever. What is the cure for this yearly time of depression? The cure varies but it is a good bet that you may be missing out on the antics of the crow—old **Corvus americanus,** himself.

The crow, although not a table delicacy, can equal the speed of ducks, the zig-zagging of doves, or the eccentricities of quail; and if you think this slow-flying overgrown target makes for monotonous shooting, you are in for a rude awakening.

The crow is found throughout North Carolina with probably the greatest concentration located in the eastern counties. There is no closed season or bag limit on crows. All you need is a hunting license, a gun, and enough shells to take care of those missed shots.

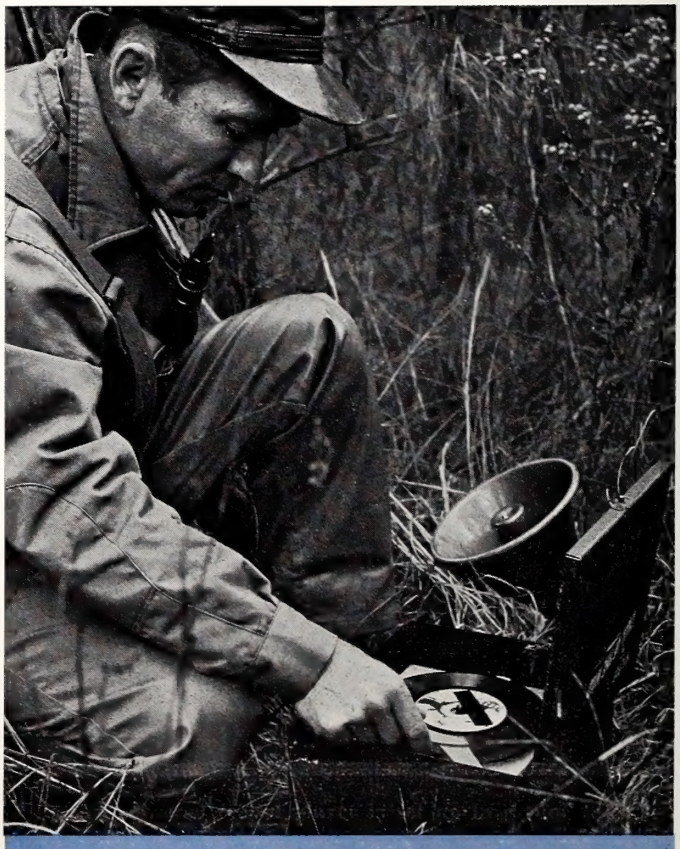
The methods of hunting crows are as varied as the people who hunt them, but in general, there are two broad categories: the varmint hunters and the wing shooters. Varmint hunters have probably taken greater advantage of this off-season target in their quest for distant, sitting targets. Rifles of several calibers may be used in crow shooting, but regardless of your choice, it should be a flat trajectory caliber with a good high-powered scope capable of zeroing in on a small target at long distances. A suitable choice could be anything from the .22 to the .243 or .244 with a scope range from 4X to the ultra-modern varmint scope. The most popular method of hunting crows with varmint rifles is to drive around the countryside until birds are spotted, either feeding in cultivated fields or perched in the top of some distant tree.

Due to the long distance between the shooter and the target, crows will, in most cases, remain perched until the shooter can rest his rifle and squeeze off a shot. A word of caution should be given here: check to see what is **back** of the target. Your varmint rifle has a long range.

Another method that can be used to advantage is to take a crow caller, either the mouth or electronic type, and call crows into the general area. In many cases the crows, after spotting you, will fly some distance away and light in the top of a nearby tree—still within rifle range—and answer your call.

Crows not only offer good long shots for the varmint hunter, but tricky wing shooting for the shotgun fancier. Some years ago several game call manufacturers came out with a record player that operates off batteries. These were so effective that their use for calling ducks and geese was outlawed by the U. S. Fish and Wildlife Service. Although illegal for waterfowl, these devices are permissible for crow hunting.

Equipped with one of these callers, plus a combination



A battery-powered record player is set up in a pine thicket. Soon the enticing cries of a bunch of crows will fill the air.

The mouth-type crow call comes into action when the black bandits are headed in. Use it sparingly, lest you alarm the birds.

recording with fighting crows on one side and riot calls on the other side, some excellent hunting can be created. One of the best ways to use the mechanical caller is to drive down back-country roads until you come to a grove of dense pines about 10 to 15 feet tall. Place the caller a short distance away and sit back for some fast shooting. Crows within about one mile of the amplifier will come to the call.

The secret in using the mechanical caller is that the crows are looking for the source of the fuss; therefore, it is necessary that you stay completely hidden until the action starts. Crows have excellent eyesight and can detect the faintest movement or slightest glimpse of an upturned face.

As an aid to even better shooting with the record caller, use decoys, either a hawk or owl, together with a couple of crow decoys. Mount the decoys on a three foot stick, bend over a small pine and secure the decoys in the top of the pine so it will look as if the crows, hawk or owl is perched in the top of the pine. This distracts the crows and prevents them from locating the source of the fuss that is coming from the record player. After several crows are killed or a few shots are fired, the remaining crows will either fly out of gun range or perch in trees some distance away.

If you happen to have your varmint rifle along, another crow or two may be added to the bag; if not, repeat the performance by moving down the road 2 or 3 miles. Many times crows will come to the caller although no crows are visible or appear to be in the general vicinity, so do not bypass a spot with good cover because no crows are in sight.

For those of us who don't want to come up with the $100 or so necessary to purchase the electrical caller, some good shooting on a smaller scale can be had using the regular mouth-blown crow caller. The same pattern of hunting should be followed that is used with the record player. Select dense pines or other good cover and place decoys in an exposed position. The advantages of the mouth caller are that you have less weight to move around and no problem in setting it up. Disadvantages are that you have less volume and sounds of fewer crows calling. When two or more hunters hunt together with a mouth caller, better shooting usually results.

The type and size of shotguns used for crow hunting is up to you. Crows usually fly in a pattern that will offer medium to long range shooting, so a large bore gun, 16 or 12 gauge, with 28- to 30-inch full or modified choke will often bag more crows—providing, of course, you will follow that age-old rule of leading the target. This is not easy to do. Shot size may range from 2's to 7½'s with more hunters favoring high brass No. 6's.

A common occurrence is to down a crow with a broken wing and upon looking for the bird find that it has not enjoyed your company and has left the vicinity at a fast pace on foot. This again illustrates that crows require a greater amount of shot than would normally be expected for their size.

As is true of most decoy hunting, a good camouflage suit, including a face mask, is good assurance for bagging extra crows. In areas where crows are hunted extensively, camouflage and extra precautions are even more necessary because of the relatively short time it takes these birds to become "educated" or leery of decoys.

Although crows can be hunted at any time, probably the best periods are immediately after hunting season is over and before crows become actively engaged in production of young, and especially in late summer and early fall when the young birds have left the nest. During the early fall when food is plentiful and you are likely to have many young-of-the-year, crows seem to be on the prowl for a good fight and will come fighting mad to a call.

This spring and fall, instead of oiling your favorite gun and storing it for the season, try keeping your shooting eye sharp by trying your luck on old **Corvus americanus.**

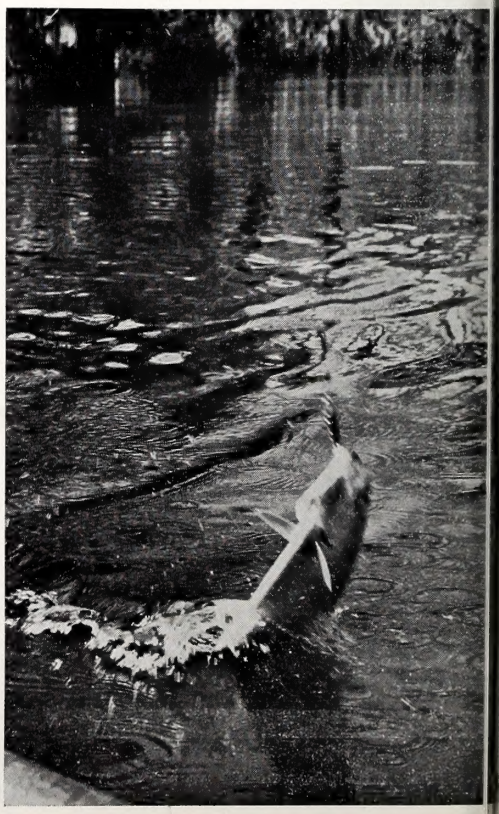
Finding the crows may be a trick in itself. Once they're located, good camouflage, realistic calling, and good aim get them.

Shad Run!

by Duane Raver

Photos by the author

A catch of hickory shad like this (upper left) may take ten minutes or all day. This fishing has its ups and downs. A two-pounder (below) leaves the water in a characteristic jump near the boat.



ANY day now the whoop will go up along the coastal plain that the shad are running. The first contingent will be mostly hickory shad and they will be followed later by the white or American shad. This is big news to commercial operators in the coastal counties, but it also brings a light to the eyes of the sport fisherman. Shad take artificial lures readily and scrap like the most determined fish you ever saw. This is a story about such fishing.

Hickory shad arrive from the ocean via the sounds and coastal rivers during the late winter or early spring. The exact date of their arrival on the upstream spawning grounds is anyone's guess. Usually by the time the grass is green and jonquils are in bloom, the hickories will be here. Perhaps a trickle at first, then silver hordes of fantastic numbers.

They run from a pound to 3 or 4 and seem to travel in groups of fish of about the same size. In other words, if you catch a two-pounder, you're likely to hook several of this same dimension. White shad will be larger, on the average, and four-pounders are common.

Most of the major coastal rivers have shad runs. In some cases the travels are brought to an abrupt halt by dams or other barriers. But in many streams, the fish dart their way up the rivers and then into small side creeks. Some of these tributaries are only a few miles long or even a few hundred yards. Many are less than fifty feet across where the fish congregate.

Fishing is usually best in early morning, but runs may continue to filter in all day long. If a spot where the creek narrows down can be found, the catch may be better than where a wide section is available to the shad. Most of the run may stay in the channel—7 to 10 feet deep—or hug the banks. When high water spills into the flood plain, the shad may cruise into the flooded timber to spawn.

The early arrivals may swim deep but as the season progresses, the fish seem to come up—even to the surface waters.

Basic tackle for hickories and white shad too, usually consists of a medium spinning rod, spin-cast outfit or regular bait-casting gear. Since most of the fishing is done in a fairly swift current, and fish of three pounds are likely to be encountered, a monofilament line of no less than 6-pound test is best. Casts are

not long ones, so even 10-pound test is no handicap.

Many of the best shad-fishing spots present several problems to the fly caster, and the fly rod isn't too popular. For maximum sport though, the long rod would be tops.

Why does a shad strike? Are they feeding, playing, angry, or what? Chances are hunger isn't the motive that moves them to hit. The strike usually is very decisive and leaves no doubt as to what has happened. There may be a couple of light taps at the lure and then the hard strike.

Spinning lures are fairly standardized but by no means limited. Perhaps number one with the serious shad fisherman is the small spoon. Some use a 0 size, particularly at the beginning of the season, while most stick with the number 1. A popular brand is the Barracuda Reflecto. It has a good hook and the action is to the shad's liking. Tiny jigs are also effective and often are used on the same rig with the spoon.

The spoon is fastened to a 20-inch length of monofilament, tied to a 3-way swivel, and the jig is fastened to a 10-inch piece of line to drop down ahead of the spoon by about a foot. Some casters find that it is a little cumbersome to cast gracefully, but the chances of attracting a shad are very much better using this arrangement.

Very seldom is clear water encountered by the shad fisherman. To the newcomer, the sight of muddy water is disheartening and may turn him back home. The flashing spoon is visible to the shad at least short distances even in turbid water. Actually the professionals at this business say that real clear water is worse than muddy water for best catches. If your lure goes out of sight in 2-inches of muddy water, simply retrieve even slower than in the clearer water.

To say that there isn't an art to shad fishing with artificials is to discard facts. There is a great deal to "reading the water" first of all. And this is something that only experience can teach you. True, even the pros go through a lot of trial and error for a few minutes each trip, but it's experience that leads them to the locality in the first place. Playing the soft-mouthed critters takes skill (and luck) too. You'll lose half of them.

The best retrieve is the one that catches fish. Now this profound bit of advice means just that: try them all. A slow, rather steady, retrieve with just a touch of rod-tip action is usually a good starting place. The spoon and/or jig will travel about three feet deep normally, and rarely will you want to come up any shallower.

Most of this type of angling is done from a small boat of 12 feet or less, and a small outboard is very helpful. If the fish are a bit difficult to locate, slow trolling may be in order. Throttle the motor down about as far as it will go and proceed upstream. If strikes are consistent in one particular spot, stop and cast awhile.

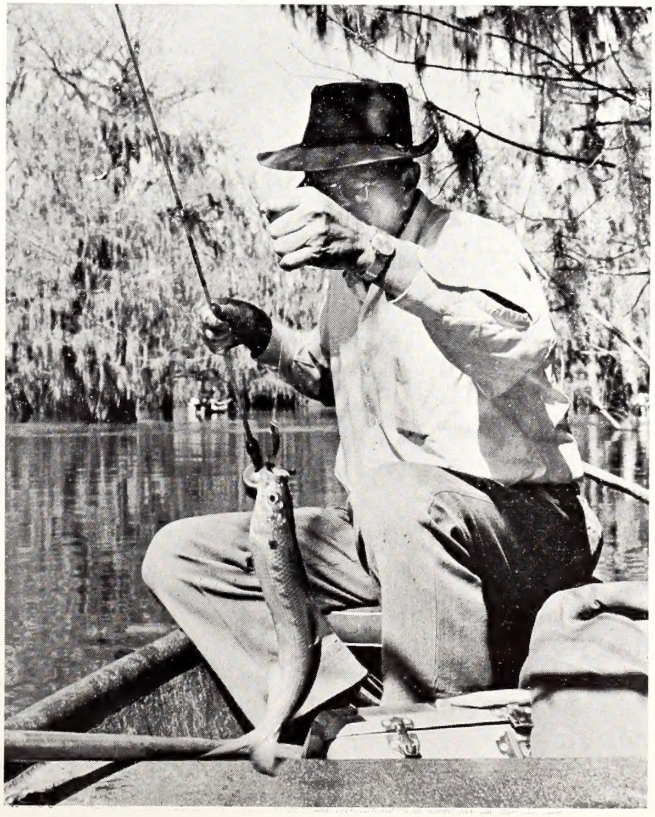
Many small creeks are crowded with boats during the height of the season, so it may pay to pick a weekday and get there early. Select a good casting spot where you can reach the channel and stick with it for at least an hour. If they don't start, then move up where the stream narrows.

Weather doesn't seem to matter a whole lot as far as success or failure in this type of fishing. An overcast, still day may be better for the fisherman. In some creeks heavy rains for several days may put the fish down. On the other hand, high water may bring on a new batch of shad from the larger waters below.

The hickory shad and the white shad are strong fighters and don't take a back seat to any fish. They hit hard, run, shake their heads, struggle on the surface and even leave the water in sparkling somersaults. On the table they leave a little to be desired, but the roe of big females makes good eating. For frying, scale and clean the fish in the normal way then make deep cuts a half an inch apart along the back. Fry in deep fat and eat bones and all.

It's about over for this shad, but you can bet he fought all the way. A net helps land many fish that might otherwise pull away. You'll be lucky to boat half the fish hooked.

Expert shad fisherman, Luther Moore of Snow Hill, shows how it's done. He uses spin-cast tackle and rarely misses. Note the tiny jig some two feet up the line from the hooked fish.



NORTH CAROLINA WILDLIFE

RESOURCE-O-GRAM

A ROUNDUP OF THE LATEST WILDLIFE NEWS

National Wildlife Week March 15-21

Tarheel hunters and anglers will be joined by other people who take their favorite recreation out of doors in observing National Wildlife Week March 15-21. This year's theme emphasizes healthful outdoor recreation as a present need and points out the necessity for planning for the future. "America Needs Outdoor Recreation—Act Now to Provide for the Future."

Time to Check Boat Registration

With warm weather coming up and the first day of spring in the offing, Tarheel boaters are reminded that watercraft powered by machinery of more than ten horsepower must be duly registered with the Wildlife Resources Commission, properly numbered, and have approved lifesaving and other safety equipment aboard before they may be operated legally on the public waters of the State. Boats powered by machinery of ten horsepower or less do not come under the registration or numbering requirements, but must have a life preserver, life belt, ring buoy or other lifesaving device for each person aboard, plus a white light in the stern or a flashlight in good working condition ready at hand at all times during night operation. Although Brunswick, Carteret, Chatham, Columbus, Duplin, Lee, New Hanover, Onslow, Pender and Rockingham counties are exempted from the ten-horsepower-or-less safety requirements, U. S. Coast Guard regulations require these precautions on all waters of the State.

Hunting Seasons End

March 1 marked the end of the hunting seasons on raccoons and opossums and thus closed the 1963-1964 shooting season for native and migratory game species. There is general agreement among hunters and game management interests that the past season has been one of the best in many years. Remaining legal targets are crows and groundhogs, and foxes in counties where state or local laws do not prohibit year-around hunting with guns.

The Skipper

Conducted by Duane Raver

ALTHOUGH March weather can be fickle with tempting spring days sprinkled among blustry winter ones, it won't be long until the boating season will be upon us. Actually many of our present-day family boats are equipped with all-weather gear such as enclosed cockpits, windshield wipers and even portable heating stoves. So lots of skippers use their boats right through winter and many commercial fishermen must be out in bad weather as well as good.

Early spring boating often means sudden, shifting, high winds. Squalls spring up with knifing rains, or even snow, hampering visibility and dampening enthusiasm at best. In most large rivers where early-season boating may be popular, high water can be expected. This swirling, turbid water hides sandbars, submerged trees and other obstacles, creating tricky situations which call for even more than normal caution.

You may find that in some of the large rivers and coastal waters, winter winds and currents have actually changed channels and other features to the extent that charts need altering. This means that shake-down cruises for the first few times require new soundings, sharp watches and changes noted on the charts.

The off-season also has a peculiar way of working on equipment. Even if the gear is carefully stored, breakdowns may occur. Fabrics on lifesaving devices, contents of fire extinguishers, steering cables, flashlight batteries . . . all may suffer from lack of use. Make sure that you're ready before pulling the starter.

Conference Topics

Last November, the fifth annual meeting of boating law administrators was held in Oklahoma. It brought together many key state and federal boating administrators from all over the country. They came to share their knowledge and experience in pleasure boat regulation, enforcement and education. Certainly a prime objective was more uniformity in the various state boating regulations, and between states' and federal laws. Underlying the entire discussion was safety.

In addition to the representatives of 26 states, federal agencies sending attendees included the U. S. Coast Guard, Bureau of Outdoor Recreation, Tennessee Valley Authority, and the Coast and Geodetic Survey. A genuine interest in the problems of others was displayed, and these problems were numerous. Of course, the Outboard Boating Club of America was there along with other representatives from the boating and engine industry.

Uniform waterway marking was discussed and the Coast Guard advised that Title 14 of the U. S. Code may be amended to permit the states to mark federal waterways not marked by the Coast Guard pursuant to the recognized uniform waterway marking system. Proposed regulations which would answer the needs of any state should be ready for review about the time you read this.

Ski vests as special purpose lifesaving devices came under discussion. It was disclosed that the Coast Guard is formalizing regulations to permit the use of vests worn by water skiers and meeting Coast Guard specifications to be substituted for similar approved devices aboard Class A, 1 and 2 boats not carrying passengers for hire. Action is expected by June or July of this year.

It was announced by the Coast Guard that it now has a newly-formed Recreational Boating Safety Division, which will be responsible for the supervision of recreational boating safety and law enforcement, formerly under the Merchant Marine Inspection Branch.

The Advisory Panel Committee on Fire Extinguishers reported that it seriously questioned whether the Coast Guard is justified in its proposal to extend fire extinguisher requirements to non-commercial outboard motorboats of open construction and less than 26 feet in length. The Committee's question arose after examining Coast Guard boating accident statistics and it was agreed that this study would continue and be reported on again by April or May.

Considerable discussion and debate centered around the "safe-loading" of motorboats. Although no conclusions were reached, it appeared that OBC's capacity rating system received favorable comment. However, since this is an important aspect of boating safety, further exploration is in order before the Boating Law Administrators will make a recommendation.

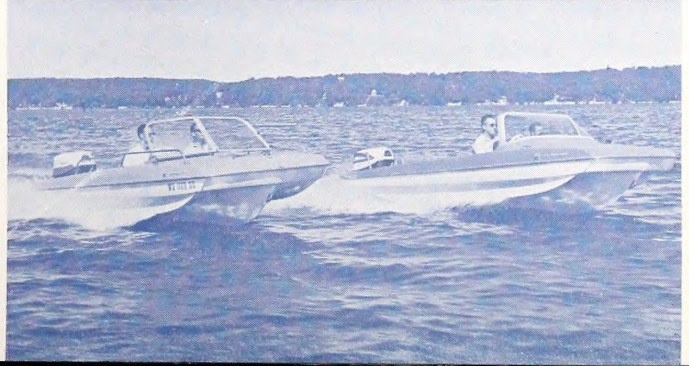
Boat lighting came in for its share of discussion at the meeting. At the request of OBC, the Panel considered an experimental vessel-lighting system which OBC submitted to the Coast Guard in April, 1962, as a possible substitute for dated lighting requirements. As evidenced by recent nighttime collisions, small boats, the way they are lighted today, blend in with harbor and landside lights. OBC's proposal features flashing lights. It entails changing the law to eliminate the constant white light aft which frequently blinds the boat operator. OBC contends existing lighting requirements, because they are set by statute, are too difficult to modify. They should be deleted from the Motorboat Act of 1940 and left to flexibility of regulations by the Coast Guard, says OBC.

The State Panel members would like to see the Coast Guard come up with revamped lighting requirements conducive to uniformity between state and federal laws. At the same time the Coast Guard says the Rules of the Road Branch in its Division of Merchant Marine Safety would be happy to consider any recommendations from the states.

It was recognized that the OBC-proposed system has merit.

In view of the very technical nature of this subject, however, the Panel proposes to set up a Lighting Committee to work with the Coast Guard in considering all possible desirable alternatives to present lighting requirements.

Evinrude Motors

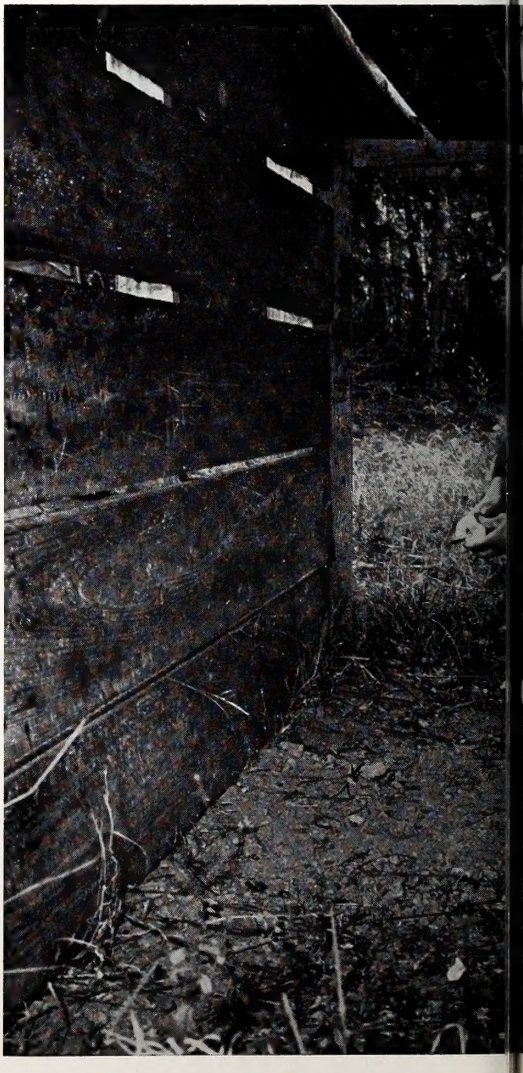


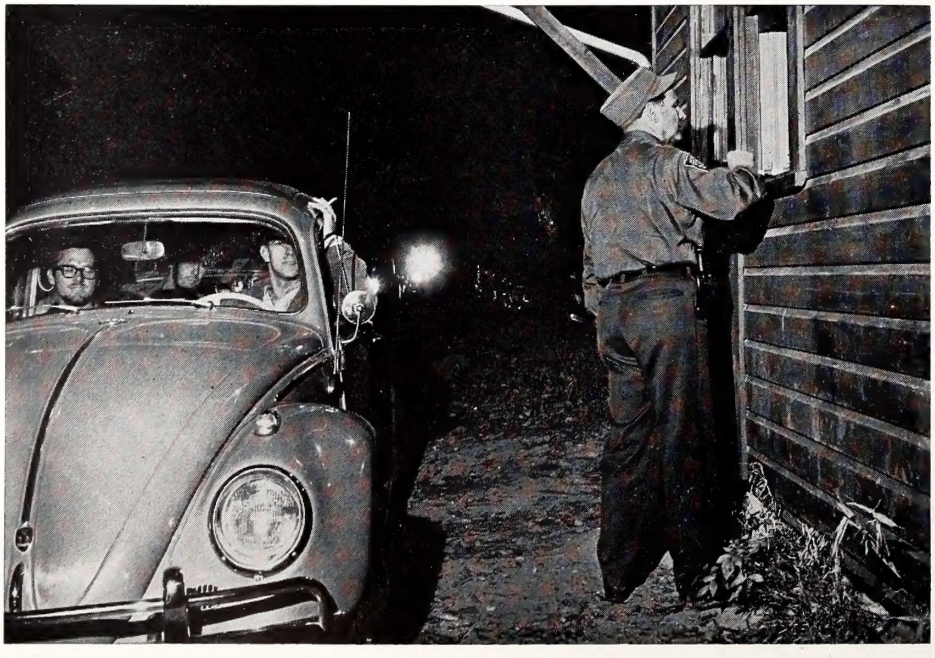
A Refuge Protector's Work is Never Done

by Frank Barick and Joel Arrington

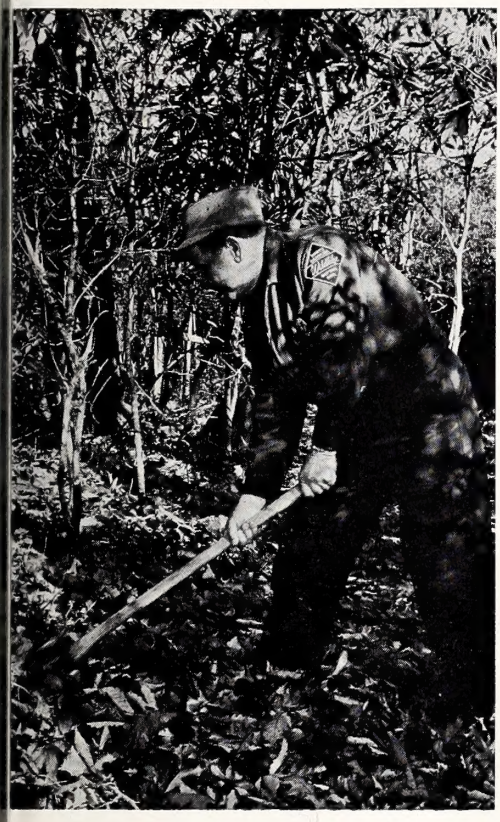
DEPICTED here are a few of the many responsibilities requiring the attention of the personnel assigned to wildlife management areas operated by the Wildlife Resources Commission.

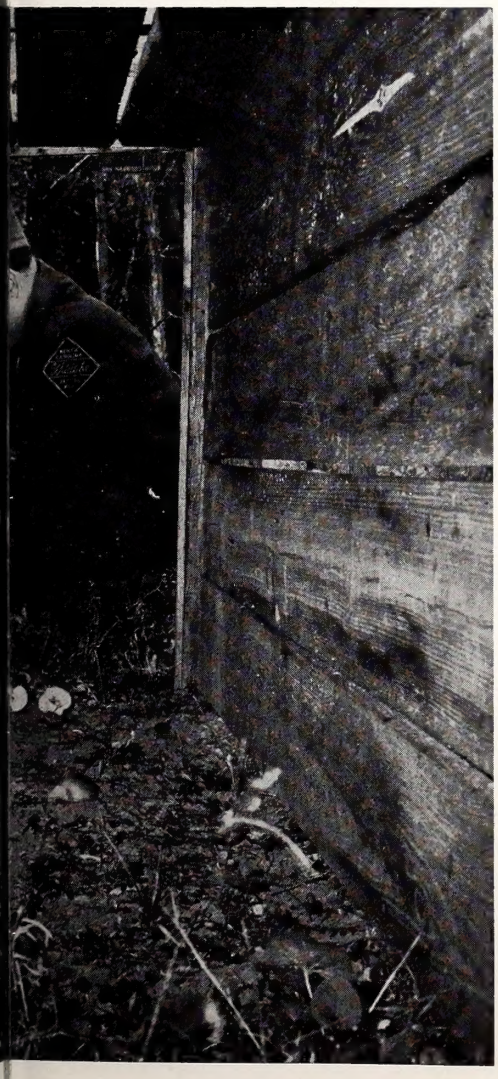
While affording sportsmen a place to hunt, fish, and even camp in some places, management areas are best known for the high quality deer hunting which they provide. Building up a good deer herd involves intensive protection within a definitely prescribed area and this means that the boundary lines must be clearly posted and painted. (left and far right)





There is an element of friendly competition among the personnel assigned to the various areas to see who can produce the most game. Payoff time is during the annual deer hunt Hunters check into the management area by purchase of a daily permit and are assigned to specific compartments to prevent over-crowding.





Deer need food and hunters need access into the various portions of the management area. These two functions are accomplished by cutting browse lanes through the woods. (upper left)

One of the post-season activities on several areas is the trapping of deer (left) to place known-age specimens into the herd. Trapped deer are ear-tagged and released at the trap. A record is made of the age of the animal and when it is killed by hunters in subsequent years the lower jaws are recovered. Since condition of the teeth is the best measure of a deer's age, these jaws of known-age deer constitute the calibration required for the aging technique.

During the course of the day, management personnel patrol the area to prevent intrusion of unauthorized hunters and to provide assistance (below) if needed.

A Key to Better Hunting

Forest Roads and Trails

by George A. James (1), Frank M. Johnson (2) and Frank B. Barick (3)

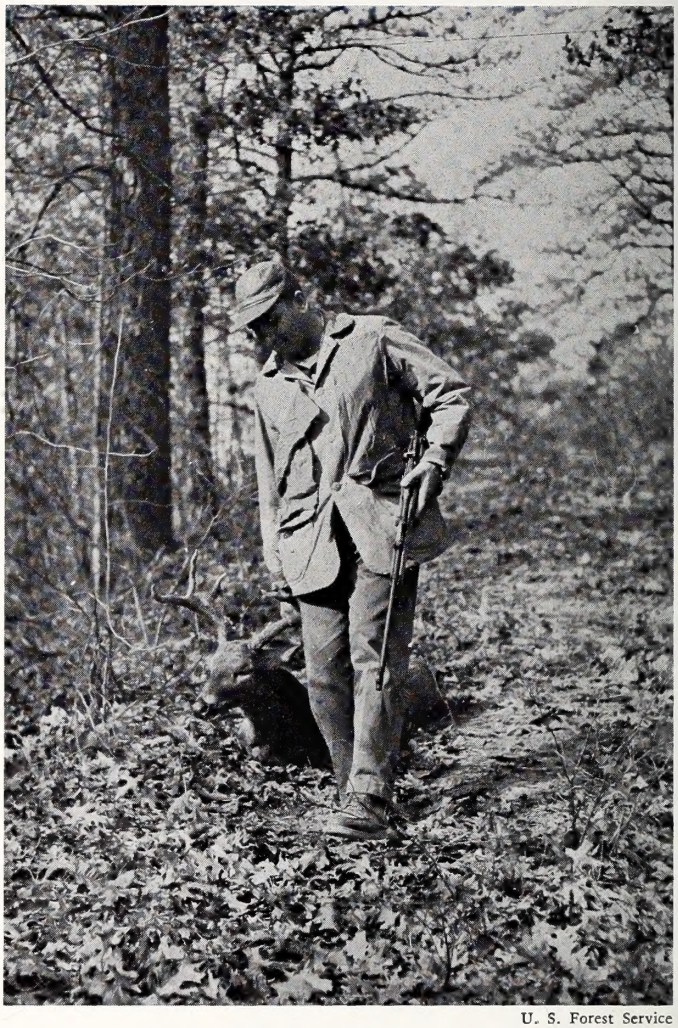
BIG-game hunting provides outdoor recreation for over six million hunters in the United States each year. They come from all walks of life, from big cities, from rural areas. They spend a great amount of money (approximately $333,000,000, in 1960) and time (almost 40,000,000 days) in pursuit of their sport. Furthermore, by the year 2000 they'll probably spend twice as much time hunting big game.

There are two important problems in managing deer herds for the increasing number of big-game hunters. One involves protecting valuable timber and forage by using legal hunting to remove surplus animals. Secondly, hunting must be distributed to insure desired harvest throughout a range. Adequate access, including forest roads and trails, is a tool which can produce uniform deer kill and reduce hazard to hunters by better distribution of pressure. The question is how much, where and what kind of access should be used.

In order to gather information on the use of roads and trails by successful deer hunters we set up a cooperative study.* Commission personnel plotted deer-kill locations on the Uwharrie Area in the piedmont and on 13 management areas in western North Carolina during four hunting seasons, 1959-1962. All successful hunters were assisted in plotting kill locations on small-scale compartment maps and the distances between kills and roads, trails, or trail and road combinations were measured. Over 4,100 deer-kill locations were used in the study.

Generally, access on these wildlife management areas provided a reasonably uniform distribution of hunters. Number and placement of roads and trails were so favorable that it was not possible for hunters to travel long distances cross-country without encountering some type of access. Approximately 40 percent of all areas checked, in both the piedmont and mountains, were within 300 feet, and 63 percent were within 600 feet, of the nearest road or trail. Largely because of good access, most deer were harvested close to roads or trails, but important differences were found between the piedmont and the mountain areas.

Hunters, in general, apparently hunted closer to access on the Uwharrie Wildlife Management area than on the western areas, showing a decided preference for "close-in" zones. They killed approximately 81 percent of their deer within 600 feet of the nearest road or trail, a zone containing 64 percent of the area. Hunting pressure diminished rapidly beyond 600 feet, with only 19 percent of harvest scattered over the remaining 36 percent of area. No deer were killed beyond 1800 feet from road or trail.



U. S. Forest Service

This successful hunter has quickly located a foot trail which was nearby. Access of this type helps the hunter.

In contrast, hunters in the mountains appeared to be more uniformly distributed. Here they harvested 54 percent of their deer within 600 feet of the nearest access, a zone containing 62 percent of the area. At the same time, the zone from 601 to 1200 feet contained only 22 percent of the area but accounted for 30 percent of kills; the 1201- to 2400-foot zone contained 14 percent of the area and accounted for 14 percent of the total kill. A few deer in the mountains were killed more than 2400 feet from the nearest road or trail.

According to local game managers, the Uwharrie is heavily used by hunters from nearby cities whereas a large percentage of hunters on the western areas are rural residents who spend much of their lives in the out-of-doors. It is suspected that differences in hunting habits between urban and rural hunters may account for the differences between piedmont and mountain areas.

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(2) Wildlife Biologist, U. S. Fish and Wildlife Service, Asheville, North Carolina.
(3) Chief, Division of Game, North Carolna Wildlife Resources Commission, Raleigh.

(*) North Carolina Wildlife Resources Commission, the U. S. Fish and Wildlife Service, and U. S. Forest Service cooperating.

Hunter access to this type of mountainous terrain is often costly. Recent investigations have indicated that present access is adequate in such western areas, however. Some piedmont big game areas such as the Uwharrie, may need roads.

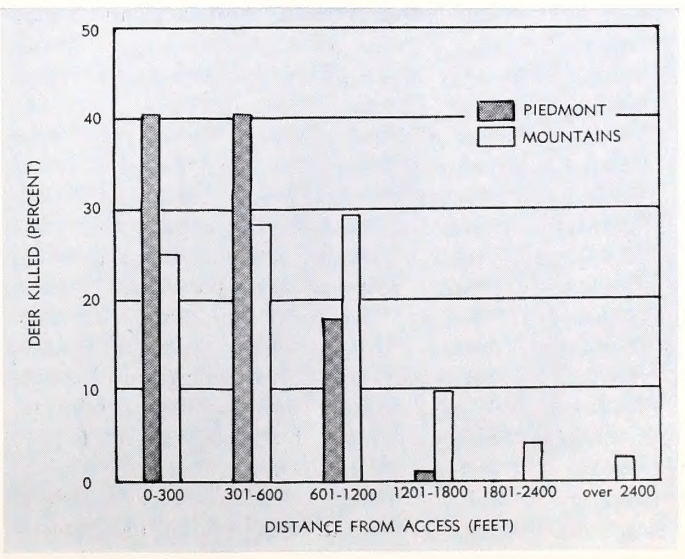
Notwithstanding regional differences, the excellent network of well-spaced roads and trails permitted ready access into all areas by vehicle, and relatively easy penetration into remote sections by foot. Our findings point out, however, that uniform distribution of hunting efforts may entail more than simply close placement of roads and trails. We have found that plans for access development should include study of visibility, terrain, and a knowledge of the type of hunter using the area. Our results indicate that the access system on the Uwharrie may not be adequate for the most effective kill distribution and that closer placement of roads and trails may be necessary. Conversely, in the western areas, with much more uniform kill distribution we suspect that present access is entirely adequate. Consequently, fewer roads and trails may be necessary in developing similar mountain areas.

Vehicles of many types line one of the well-spaced access roads provided for hunters. Foot trails fan out from here.
U. S. Forest Service

Perhaps the most important find from the study was that roads and trails apparently served about equally in obtaining uniform kill. Consequently, in sections which are being underhunted the construction of additional trails rather than roads should result in a more uniform deer kill. Good trails, though certainly not inexpensive, are much less costly than roads to build and maintain, and frequently they are much more desirable aesthetically. Trails built into areas where greater deer harvest is desired should be well marked and located to fully utilize existing road networks.

The sharply increasing demand for outdoor recreation and the parallel increasing demand for other forest products requires maximum production of all natural resources. Additional studies of this type are planned by the agencies concerned to increase not only production but also use of all resources in a mutually compatible manner.

This chart shows that hunters killed deer closer to access on the piedmont (Uwharrie) than on the mountain areas.



Planting for Wildlife

by Luther Partin

This is the conclusion of a two-part discussion pointing up some practices beneficial to small game on your land.

Luther Partin

Sericea lespedeza is a multiple use plant which serves as a cover crop, helps improve the soil, and also furnishes seed.

THE Soil Conservation Service has long recommended sericea to farmers as a soil-improvement and cover crop on eroded areas, and for deep, sandy soils to control erosion and add organic matter and nitrogen. It didn't take long for farmer-hunters to realize they were getting a bonus from its use in the form of better small game crops. So what started out as a possible side benefit has developed into a major use —the production of wildlife.

The annual food mixtures mentioned earlier are used as a regular wildlife-producing practice by many people. These mixtures, composed of millet, soybeans, cowpeas, cane and annual lespedezas, are distributed in five-pound units. Each will produce about ⅛ acre of preferred food plants for rabbits and quail, and should be located near good cover to complete the environmental needs. The obvious short-coming of the mixture lies in its annual nature. It must be planted each year. In years of drought or excessive rainfall, plantings may have to be late and in some years cannot be made at all. Alternating years of lean and plenty are not conducive to a consistent supply of small game.

It is a good idea to plant one or more of these units next to your perennial wildlife plots. The annual mixtures will produce a good supply of food while your perennials are getting their root systems established. The annuals do a good job of producing and fit well into a rotation plan, but permanent plantings are usually more satisfactory over the years.

Tobacco farmers are passing up a sure thing when they fail to make use of their old plant beds as food plots. Usually located in or near woods, they furnish almost ideal conditions. The rich soil, good moisture supply, isolation, and nearby cover, plus the very important fact that they are already cleared, make it a shame not to use them.

There are several possibilities for using the plant bed. If you clear a new one each year, disk it after the tobacco crop is transplanted and plant perennials, such as shrub and sericea, with annual food mixtures or annual lespedezas included to supplement the first year's food production. A little fertilizer and mowing will keep the perennials in good shape.

Those who rotate between several bed sites can use another arrangment which will benefit the wildlife crop. Keep the sites not being used planted in the annual food mixtures. The different food plants included will provide soil cover and improvement between periods of use, and you'll find quail around these beds all through the winter, if the cover is sufficient.

When you go out to get this year's plant bed ready for tobacco seed, it's a good time to get those old beds ready for wildlife plantings. The disk behind the tractor is usually all you need. Late winter is a slack time, usually, and a good time to get all your wildlife plantings sites ready, new and old. When planting time comes, that part of the job will be out of the way, and there will be less of a chance that other farm operations will keep you from getting around to it.

A perennial grass, fescue, has come into the wildlife picture recently. The tall, erect seed heads and long, semi-drooping leaves have an obvious value to quail in the form of loafing, roosting and nesting cover. Other game species, mainly the wild turkey and deer, use fescue as an important food source, while rabbits utilize it for both food and cover. Two or three pounds of Ladino clover seed added per acre greatly enhance both the taste appeal and feeding value of a fescue planting.

Its use as an unharvested cover crop has been steadily increasing for several reasons. One reason, which certainly accounts for much of the recent plantings in central and eastern Carolina, is the demonstrated value of fescue in a tobacco rotation. It seems to hold down nematode populations, and reduce the occurrence and severity of some tobacco root

diseases. Many farmers have noticed an increase in the water-holding capacity of light soils after fescue. This all adds up to more profit, which anyone can appreciate.

Other factors involved in the increased use of fescue have been the Conservation Reserve and the Feed Grain Programs administered by the Agricultural Stabilization and Conservation Service. One feature of the Conservation Reserve program provided payments to farmers for putting their cropland into a five-year cover plan. Naturally, many of them used fescue, because of its proven value and perennial nature. The Feed Grain program provides payments for surplus grain land taken out of production. The designated land must be planted to a cover crop. Here again, many Tarheel farmers turned to fescue.

So we see many applications of fescue in planning conservation on the farm. For large acreages of cover crops, in the rotation, or for turn rows, meadow strips, etc., it has a definite place in wildlife planning.

The disappearance of rail fences and hedgerows and the widespread use of bulldozers have destroyed a great deal of the habitat that once supported thriving populations of quail and rabbits. This is especially true in Piedmont North Carolina, where livestock farming has increased tremendously in the past 30 years. The barbed wire fence distributed so generously throughout this part of the state offers little food and even less shelter for dwellers of the shrub.

Jack Dermid

This tobacco plant bed could serve as an ideal wildlife food patch when the young plants have been removed.

A plant which has served well as a substitute for the hedgerow of the past is multiflora rose. A tall, drooping, thorny plant furnishing excellent cover for quail and cottontails, it has been an effective tool in aiding the comeback of small game in the foothills section, and in other parts of the state. Many farms now sport attractive "living fences" of multiflora rose in place of barbed or woven wire. They meet the old-time requirements for a "horse-high and hog-tight" structure and serve as habitat for the fur and feather clans as well. Under the protection and seclusion of the arching canes, cottontails and quail let biology take care of their multiplication tables. With food available not too far away from the sanctuary, these small game species once again become part of the farm scene.

Though functioning primarily as a cover plant, multiflora produces fruit which is eaten by various songbirds. The seeds are often found in droppings, and under good conditions of germination, multiflora may sometimes begin to appear in places it is not wanted. For this reason multiflora has sometimes come to be in ill repute. This regrettable facet of its nature, plus its decided lack of adaptability to prosper in deep sandy soil, has caused some people to use other habitat improvement materials. Others have continued to use it, secure in the knowledge that its spreading to unwanted places could be easily controlled by judicious application of any of the new brush-killing chemicals.

Wildlife management, like other sciences, has taken giant steps forward in the past 20 years. There is a world of good practical information that can be applied in your community. Habitat improvement seeds and plants, tested and proven to be productive on land just like yours, are available for the asking from the North Carolina Wildlife Resources Commission.

Advice and help on wildlife management are available from several sources. Technical advice and assistance for farm conservation planning are offered by Soil Conservation Service personnel. Cost-sharing for "Conservation Practices with Benefits Primarily to Wildlife" (Section G of the ACP Handbook,) is available from the Agricultural Stabilization and Conservation Service. One type of payment is cost-sharing for lime, fertilizer and seed that must be bought, and is generally aimed at converting cropland to wildlife habitat by putting the land into suitable vegetative cover. The other type is cost-sharing in developing farmland into shallow water areas for wildlife. Items eligible for cost-sharing are earthmoving, clearing, drain materials, fertilizer, and seed.

Jack Dermid

Upland game will benefit from this food patch even though it might be a small area. Perhaps it's a converted plant bed.

If you want to develop cropland acreage for wildlife, contact either of the two federal agencies listed above. Both will help with your planning. If you are interested in food plots, annual or perennial, you may also contact the nearest wildlife protector, wildlife biologist, county farm agent, agriculture teacher, or any other agricultural worker. Any of these people can steer you to the proper person, or supply you with application blanks for planting materials. They will probably be delivered to your home just prior to planting time. Planting instructions are included with the materials and good suggestions for adapting them to your local conditions can be made by the local professional wildlife or agricultural workers.

Flue-cured Bluebirds

by Luther Partin

"WHAT'S happened to our bluebirds?" This is an oft-repeated question these days. The answer is still in doubt, but several possibilities are receiving a good deal of consideration. One opinion offered by some and accepted by many is the general lack of hollow trees available to the cavity-loving bluebird for nesting. A quick look around the Tarheel landscape will confirm the shortage of this environmental need, and may help explain another situation which is contributing, literally, to the downfall of the bluebird.

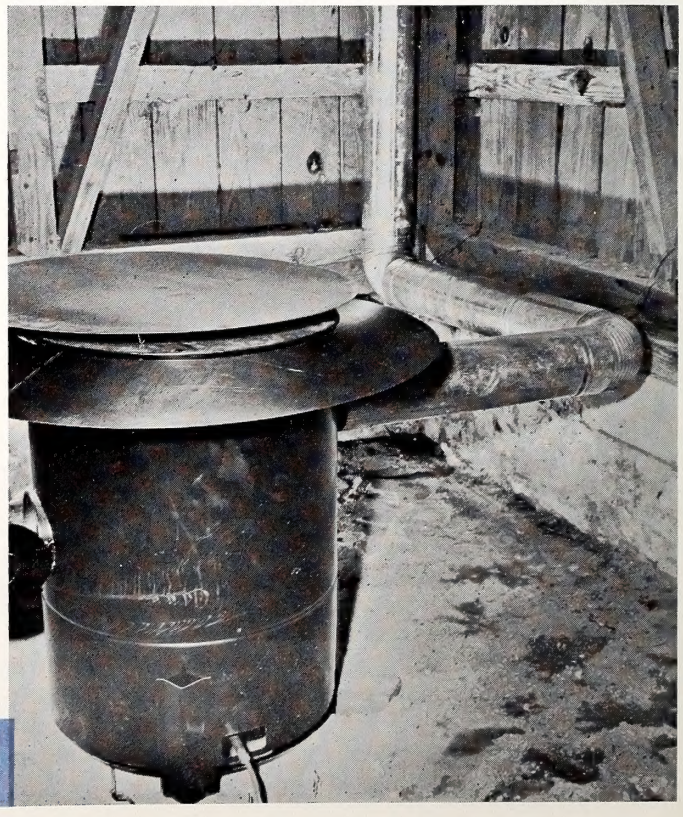
People from many parts of the state have submitted evidence that a large number of birds perish each year in oil-burning tobacco curers. The type of burner having an individual flue or smokestack extending up through the roof is the killer. What attracts birds to these deadly cylinders? Some say they're looking for shelter, or go in out of curiosity or by accident. Others say, as in the case of the bluebirds, that because of the elimination of natural sites, the instinct to nest pulls them in. At any rate, once they're inside it's a one-way trip down. The flue is too small to permit flying by most songbirds, but they can probably soften their fall with the restricted wing action that the small space does allow. The drop itself is probably insignificant, but a bird would be better off if the impact killed him, unless death from lack of water and food could be considered a better way to go.

And that's about all that can happen to a bird inside a closed burner. His mummified remains may be found by a farmer cleaning out his burners in preparation for the next curing season, or perhaps by children playing in the barn. But, as is even more likely, most of the victims may go undetected and help explain why "your cigarette tastes different lately."

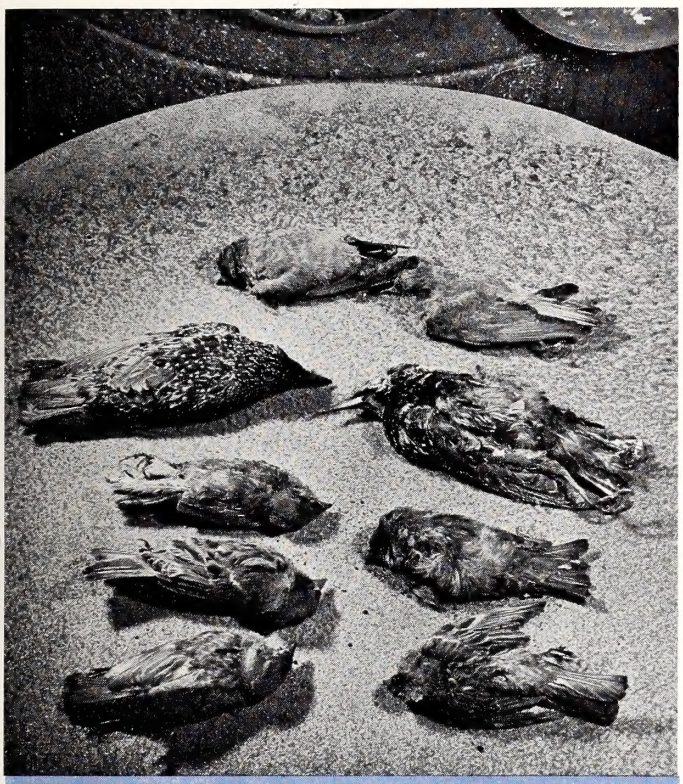
To get some idea of the number of birds being trapped and to obtain information and illustrations for this article, the North Carolina Wildlife Resources Commission made a spot-survey of tobacco barns. This writer, armed with flashlight, camera, tripod, flashbulbs, wrenches, screwdrivers and pliers, examined several dozen barns in the Bright Leaf Belt. The findings confirmed the fears of many concerned birdlovers.

The first burner in the first barn checked had three dead sparrows. None of the other three burners in the barn had any. And so it went. The birds were usually concentrated in one or two burners in a barn. They obviously were not advocates of segregation, as bluebirds, sparrows, wrens, and starlings were all found sharing the same final resting place.

The largest single find was a mixture of nine sparrows, starlings, and bluebirds in one burner. Another burner in the same barn had five birds. A third had two; a fourth burner was empty—a total of sixteen dead birds in one barn. Two other barns with smokestacks on that particular farm yielded three more dead birds—a total of nineteen on one farm. That was much higher than the average for the survey, of course. It wouldn't take long to materially decrease the songbird



The tobacco barn above looks harmless but could be the entrance to a bird death trap, the burner, like this one.



Two bluebirds, two starlings and five sparrows, all from one burner, point up the seriousness of this problem.

population at that rate. There were many barns and many farms that had no trapped birds at all. Significantly, most of these were cases where the doors to the oil burners had been left open.

One happy note of the survey was the discovery of an English sparrow still alive in a burner. Very weak, but evidently determined to face the end with typical ornithological bravery, he was standing courageously among several of his fallen comrades when the door was opened. He was kind enough to pose for several pictures, after preening his feathers a bit and apologizing for his bedraggled appearance. But the flashlight and exploding flashbulbs must have been too much for him. After a few pictures, he mustered his strength, pecked the photographer's hand and flew out the open burner door, and up and out the gable ventilator to freedom.

Very few farmers could remember finding birds in their burners in previous years, in spite of the birds that were found during the survey. Yet, there is a possibility that many birds are trapped in burners, unknown to the farmer who cleans them out. In several instances where farmers had not discovered birds in the past, a small son or daughter remarked that they had gotten dead birds out of the burners while playing in the tobacco barns. In practically every case where children had taken birds out of the burners, parents knew nothing about it. It would be difficult to estimate just how many trapped birds go unnoticed by adults in this manner.

There are several hundred thousand tobacco barns in North Carolina. The survey average was about one bird for each barn checked. Figure it for yourself. If this even remotely resembles the true situation, a staggering number of birds are killed each year in this manner.

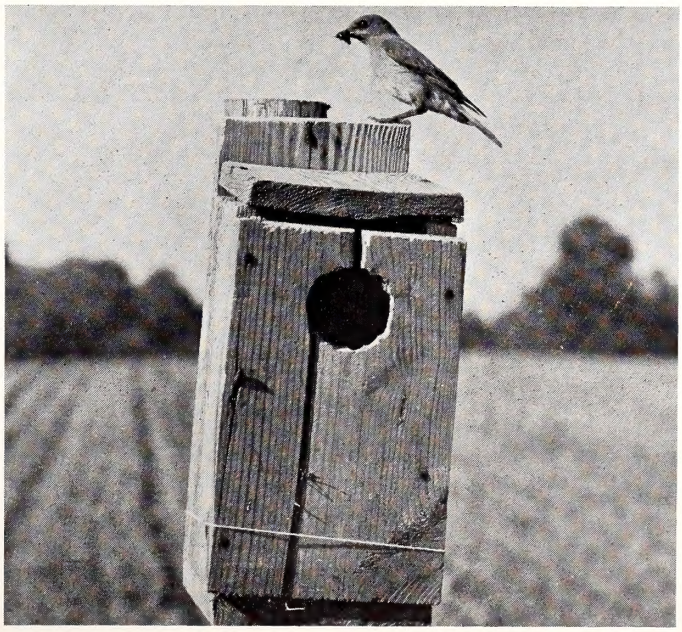
And now let's have a remedy. The simplest way to prevent birds from being trapped is to leave burner doors open after the curing season. If any birds get in the smokestacks they can fly out the burner door without harm. But some burners don't have doors; they have removable tops, instead. With these, the tops can be left off between curing seasons, or, better yet, the joint of pipe next to the burner can be removed. Birds coming down the pipe find themselves in a barn instead of trapped in a burner. Getting out of the barn is no problem, even to the largest songbird. Most barns have an opening in the gable for ventilation, and there is almost always an open space between the rafters and the plate. The ease with which birds can go in and out of tobacco barns is evidenced by the large numbers of birds that roost in tobacco barns during the winter.

A simple preventive measure when building a new barn, or installing burners in an old barn for the first time, is to fasten a small piece of hardware cloth around the bonnet on top of the smokestack. About ½-inch mesh is fine. Or, if you don't use bonnets, make a cap out of hardware cloth. Shape it like a big ice cream cone, or a funnel, and fasten it over the top of the smokestack. Of course these measures can be applied to old barns, but it's a lot more trouble than leaving a burner door open or removing a section of pipe in the barn.

Every farmer was quick to say he would leave his burners safe for birds at the end of this curing season. As one fox-hunting farmer put it, "Just one little bird killed that way is too many; they're worth a little effort to protect 'em just to have them around to look at and listen to, besides helping to keep the bugs and worms from eating up the crops." One farmer ventured the following, "The reason tobacco worms and boll weevils are getting worse every year is because there's not as many birds as there used to be. Maybe this is what's happened to 'em."

It takes but a little effort to make sure all the burner doors are left open after curing the last barn of tobacco. Or to remove the section of pipe next to the burner, if it has no door, or to bird-proof any new smokestacks you install. Do it this year. You can save many birds that will thrill you with their music and flashing colors, and, if the farmer was right, you'll be cutting down on the amount of insect dust and spray you'll have to buy in the future.

Here is another aid in solving this problem: housing for bluebirds. They will be looking for nesting places this month, so have your houses up soon. Check those tobacco barns, too.



Chain Pickerel

GASTON RESERVOIR

by William B. Smith
Fishery Biologist

GASTON Reservoir is the newest, and second largest, of the three hydroelectric impoundments on the Roanoke River lying wholly or partly within the State of North Carolina. The dam, erected by the Virginia Electric and Power Company and completed in 1963, lies between Roanoke Rapids Reservoir and Kerr Reservoir and is some eight miles upstream from the Roanoke Rapids Dam.

The dam, which rises 105-feet above the stream bed, has created a lake 34 miles long and 1.3 miles across at its widest point, with 20,300 surface acres and 350 miles of shoreline. Unlike Kerr and Roanoke Rapids Reservoirs, which are characterized by extensive water-level fluctuations, the water-level fluctuation in Gaston Reservoir will not exceed one foot under normal operating conditions. This stabilized water level will make Gaston Reservoir a boating and water-skiing paradise. It is hoped that its effect upon the native fish population also will be beneficial.

During the 1963 fishing season, many fine catches of largemouth bass, chain pickerel, crappie, and other panfish were reported from all parts of the reservoir. Fish sampling has indicated that largemouth bass, yellow perch, black crappie, bluegill and chain pickerel all enjoyed a very successful spawning season. In addition to the species of fish which were trapped in the impoundment when the dam was constructed, the North Carolina Wildlife Resources Commission has stocked largemouth bass fingerlings and 1,000,000 striped bass fry. In addition to these stockings, the Virginia Commission of Game and Inland Fisheries has stocked northern pike and muskellunge. The success of the striped bass, northern pike, and muskellunge stockings will be evaluated at a future date.

North Carolina fishing license requirements apply to the waters of the reservoir lying within North Carolina. A reciprocal agreement with the State of Virginia enables any Virginian or North Carolinian (with a valid State-wide fishing license from either State) to fish in all waters of the reservoir. The same agreement applies to valid non-resident licenses from each State. All fishermen are cautioned to check the special 1964 North Carolina Fishing Regulations pertaining to the size limits and the creel limits which apply to Gaston Reservoir: the most important, the placing of a 12 inch size limit on black (largemouth) bass.

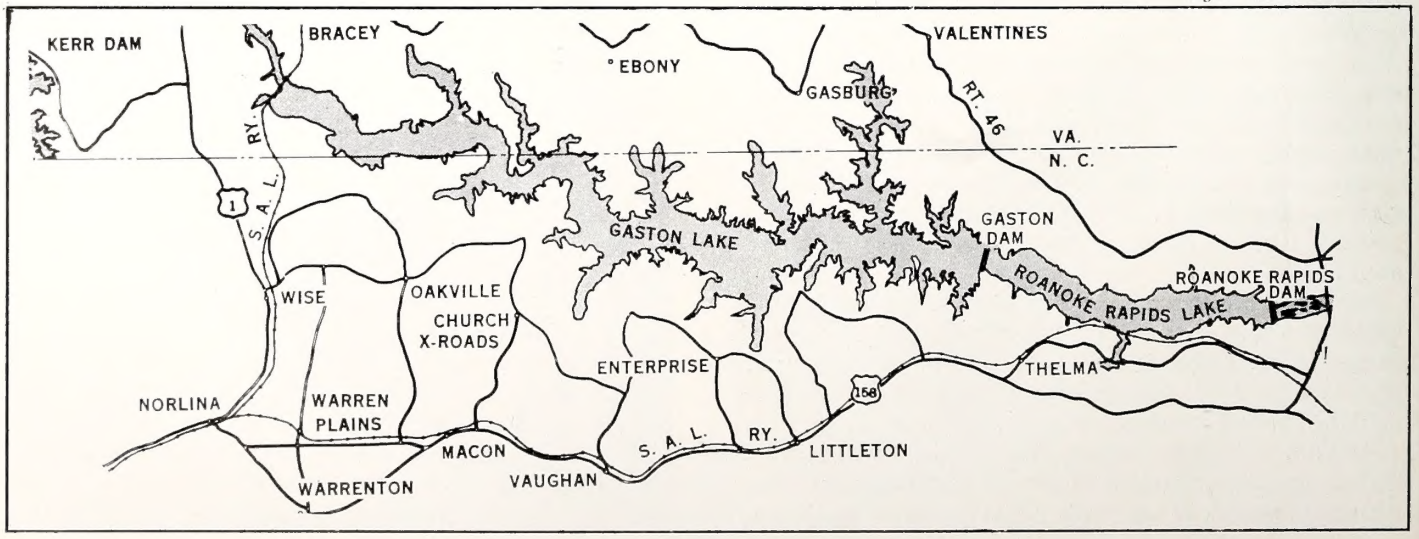
The North Carolina Wildlife Resources Commission plans to construct three boating access areas on Gaston Reservoir. One will be located on Pea Hill Creek in Northampton County just off County Road No. 1214; one in Halifax County near the dam; and one in Warren County on County Road No. 1357.

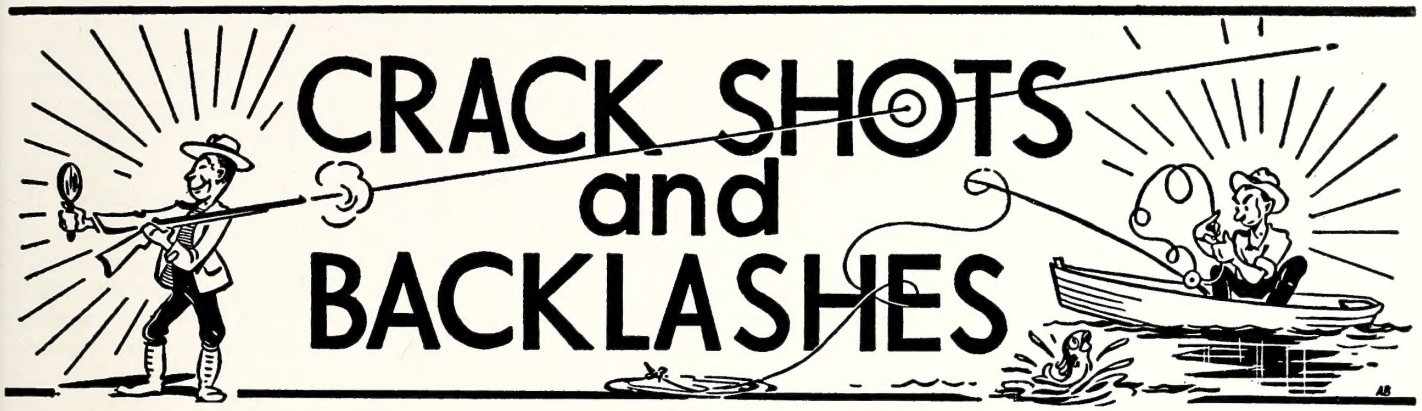
Two marinas will be in operation on the reservoir in 1964 plus at least one smaller boat-rental dock, The Eaton's Ferry Marina, located on County Road No. 1344 at the old Eaton's Ferry Landing, will offer a boat launching ramp, rental dockage, boat repairs, and marine supplies. The Tommy Tucker's Park and Marina, located near the mouth of Pea Hill Creek will offer a boat launching ramp, picnic facilities, and a dancing pavillion. Solomon's Landing has rental boats available. It is located near the Epworth Community. The Lakeside Inn, a privately owned Negro recreation area and launching ramp, is located on the north side of the reservoir on County Road No. 1362, Warren County. In addition to these launching sites, boats may now be launched from inundated roadbeds where County Roads No. 1357 and No. 1362 (both in Warren County) cross arms of the reservoir.

Eating and sleeping accommodations may be found in the nearby towns of Warrenton, Littleton, and Roanoke Rapids.

Whether your interest lies in boating, skiing, fishing, or even waterfowl hunting, Gaston Reservoir should provide many hours of pleasure.

This map shows Gaston Reservoir and the surrounding area. Other roads which are not shown here end at the water's edge and provide fishing spots and even boat launching sites. A detailed county map will help the fisherman find access roads.
Virginia Electric & Power Co.





DEPARTMENT OF LETTERS TO THE EDITORS, FIELD NOTES, AND ITEMS OF INTEREST

Conducted By Rod Amundson

In recent issues *Wildlife* has published articles dealing with the pros and cons of hunting — why I hunt (for game species, of course) and why I don't. Realizing that a magazine such as *Wildlife* reaches many kinds of people with many attitudes, the editors prefer not to take side on an issue of this nature. Our *Crackshots and Backlashes* section tries to serve as a sort of public forum on topics worthy of discussion, encouraging readers to express their opinions.

The following is an expression of opinion by Richard Starnes, columnist for the *New York World-Telegram*. Your comments are invited.

The Poor Sports

"Mr. Johnson got himself a nice fat buck for the Christmas season, busting him with one shot if dispatches from the hinterland are to be credited, and the next sound we hear is bound to be the keening of hysterical little old ladies of both sexes who contend hunting is cruel and nasty.

"Anyone who publicy admits to being a deerslayer, or a hunter of any description, is immediately besieged by the spiteful, bloodless legions who are calculated to oppose any human activity that people enjoy. I have fetched up against this cheerless crew more times than is comfortable to think about, but their want of logic continues to be a source of astonishment.

"The same wistful dolts who nag a man to the edge of his grave because he is a good enough gun to bring home a mess of quail will eat 49 pig feet at one sitting and never give a thought to the friendly porkers that made the supreme sacrifice on his behalf. Everybody knows that chorus girls acquire mink wraps through thrift and industry, but nobody wastes a thought on the hoity-toity weasels who perish in the process.

"Now it so happens that quail fitted out with a coat of bacon and gently broiled make the second best dish in the world, the first being a three-way tie between steamed clams, chili and black-eyed peas. I don't believe I am compelled to abide by any tearful Schweitzerian ethic that would deprive me of such exalted victuals. Every steak cooked to ruin by the typical American housefrau came from a brute now in the happy hunting ground. And no man alive can make catfish pie unless some blameless catfish first gives up the ghost.

"The difference (which you will never get any professionally compassionate simpleton to admit) is that hunting and killing game is pleasure of a high order, and buying pot roast is a chore. The steer is just as dead as the deer; indeed he suffered the ultimate male indignity in his youth so that upon his maturity and execution he would provide better meat. No such barnyard cruelty was inflicted upon the noble stag, moreover, he got a run for his life which the cow critter was denied.

"Now it so happens, as long as this is a subjective essay, that one of my mild pleasures is feeding songbirds, which is the principal reason I despise cats. Cats kill birds, but you will never hear a cat lover clamoring for a law against bird-killing by cats. Cats, to be sure, torture birds to death, which is a thing no quail hunter or bird dog would think of doing.

"Anti-hunting bigots are nothing but wowsers, a breed defined by the late H. L. Mencken as those desiccated souls who are tormented by the nagging suspicion that someone somewhere may be having a good time. They share a high degree of consanguinity with the lunatics who fastened the Great Thirst upon the Republic from 1920 to 1933, and their dismal motivation is identical. John Barleycorn's real offense was that he made life pleasant for a great many people, and not that he occasionally wrecked a home or consigned some sniveling tad to sell matches on windswept street corners.

"There has always been a broad streak of puritanism in the specimen American yahoo. He believes he is somehow sinning if he finds himself enjoying anything. Card playing? Cards are the devil's prayer book, young man, and forget it at your peril. Necking in the rumble seat of an Essex? It's the road to perdition. An icy martini to knit up the raveled whatsitsname before dinner? The next stop is the gutter and a grisly end at the hands of the medical students. Spend a day in the woods, breathing deeply, walking silently, exercising man's atavistic instinct for the hunt? Like man, you're nothing but cruel and possibly sadistic as well."

Visitors Welcome?

DEAR SIRS: Have at last seen your July issue of Wildlife, **and how I missed it I**

do not know. Looking through it I saw the article on snakes which reminded me that I wanted to ask you a question about an accident that happened in our church about two years ago. In the back of our church it is plastered; but there are also folding doors. These doors have framing around them like the finish of an ordinary door. Just before service time one night we discovered a black snake on the ledge above these folding doors. The question is how could that snake crawl up that smooth plastered surface and move down that narrow ledge? Being able to crawl up the side of a tree is more understandable; but I don't know how a snake adhered to that straight up smooth surfaced wall. It is about eight feet to the lap of this ledge. If you think you can give some light on an answer to this question I would appreciate it. MAHLON B. HUGHES, JACKSONVILLE

If this is not a prankster's idea of a joke on your church, your guess is as good as ours as to how that snake got there.—Ed.

Watertight Answer

DEAR SIRS: As I am a Wildlife subscribed may I ask a question?

Since a small boy I have loved and played with little chipmunks and have always wanted to know what happens when the heavy rains come and completely fill and saturate the earth where they dwell. Why don't they die in their sleep? We know that water trickles down every little crevice and hole until it is filled and running over, and the water penetrates every inch of earth filling every open space to a reasonable depth, his little burrow must become completely filled with water; why doesn't he drown in his sleep? He doesn't come out until spring, please explain. JOE M. MANUS, CHARLOTTE

Chipmunks dig their burrows in such manner that the living space is above the entrance so that water cannot flood the main chambers where they sleep or store food. Similarly, muskrat burrow entrances are usually under water but the dens are dry.—Ed.

A Helping Hand

DEAR SIRS: During the past several years the trout fishing has greatly improved in Transylvania County. My sons and I feel that this is a direct result of efforts of the Wildlife Resources Commission. We also feel that your efforts to clean up the streams of North Carolina are very important and we urge you to keep up the good work. If at any time there is any way I may be of assistance to you please do not hesitate to let me know. C. A. TINSLEY, BREVARD.

A Mouthful!

DEAR SIRS: This may sound unreasonable, though it is a fact and I saw it happen: While walking in some woods I heard a very peculiar noise and when I looked to see what it was I discovered a king snake and an upland moccasin having a real battle. I watched them until the king snake finally wrapped his body around the other snake, and squeezed it to death. After killing the moccasin the king snake took its head in his mouth and began swallowing until he had consumed the body of a snake as large as his own. I don't know how long it took for the king snake to digest this enormous amount of snake meat, but I do know he had a belly full and seemed to enjoy his meal of fresh meat. P. M. CARPENTER, SIMPSONVILLE, S. C.

Snakes, like many other cold-blooded vertebrates, are canabalistic, and non-venomous snakes are apparently not affected by venom from poisonous snakes.

Bluebirds and Turkeys

DEAR SIRS: I would like to build a few bluebird houses to set out early next spring. Would you please send me the plans. I must be making them wrong because all I can get in the ones with my plans are sparrows.

Also, if you have plans for a "rabbit gum" please send them too.

I think the Wildlife Commission is doing a wonderful job for our state; but I just can't figure out why we should trade even one deer for one turkey. I am referring to a story seen in the Raleigh paper lately. There seems to be about 25 deer hunters to every turkey hunter, so why should we pamper the turkey hunter.

I'm all for more wild turkeys. As a matter of fact, I'm all for more of all wildlife, and stiffer fines for those game hogs who firelight deer, and shoot game out of season.

Pennsylvania has a wonderful turkey restoration program. Couldn't we try that with the new man coming from Arkansas? I hope he can get our "cry baby" turkey hunters more turkeys without sacrificing the deer that we have spent so much time and money to get.

Before I close I would like to compliment all of you on Wildlife Magazine. We really look forward to it every month at our house. LOUIS W. JONES, BURLINGTON

Popular Cover

DEAR SIRS: How would I go about obtaining a copy (in color) of the Cover on the December, 1963 issue of your magazine (Vol. XXVII, No. 12).

As you say, "it represents a passing age . . ." It is an interesting old mill and I would like a copy with a view to framing it. Size on Cover seems to be an 8¼ x 8½.

May I hear from you—(MISS) OLIVE S. HELDT, WASHINGTON, D. C.

There have been many requests for frameable prints of our December cover. The process of producing color prints from color photographs is somewhat expensive, and the process of making larger prints from the original color transparency is complicated. Although we don't like to have you cut up the front cover of any of our issues, your best bet is to frame the print that came with your magazine.—Ed.

Something to Crow About

DEAR SIRS: In seeing the picture of the Great Horned owl in the inside cover of the October issue, I thought it might be of interest to the varmint hunter to know that this is one of the best crow decoys one can find. Here is a snapshot of myself and

my decoy that I have used with great success. JACK H. KING, LINVILLE ROAD, KERNERSVILLE

Variety Vacationland

DEAR SIRS: Please accept my check for another two-years of the world's greatest bargain—Wildlife in North Carolina. It's difficult to realize that the youngster who sold me my first subscription has probably graduated from high school and college and, who knows, may be a wildlife enthusiast himself. His dad was a ranger at the Pisgah National Forest when I met him.

We have never been back to that part of the state, which illustrates the only complaint I have to make about North Carolina. There is so much of it and all so different that a person like myself with limited time to spend cannot go back to any one part without missing another, equally interesting, area. This year we made our first trip to Hatteras and, once more, hadn't the time to fully enjoy the many possibilities offered. Mention North Carolina to a one-time visitor and you'll get replies like "Aren't the Smokies grand?" "Don't you just love the Piedmont?" and "Ah, yes, Nag's Head!" like blind men who described the elephant.

My favorite part? All of these and the Wilmington and Goldsboro areas, as well.

We greatly enjoy all of Wildlife and think the covers and the photography outstanding. WALTER L. PRATT, BRISTOL, CONN.

On Target

DEAR SIRS: I am just 10 years old, and I would like for you to know that I killed a four-point buck, running, with one shot.

I hope you can find room to put this in "Wildlife In North Carolina." DAVID ELEY, JACKSON

There is always room for a crackshot!—Ed.

To Cook A Duck . . .

DEAR SIRS: I wonder if it is possible for you to tell me what to do when a band is found on a bird. I found one on a wood duck which I recently shot. It is from Mass. If you could tell me where to send it, I would appreciate it.

I have been having some good duck shooting recently. The last time I went, I got one black duck and two woodies. I have killed two blacks this year, and was very proud of them. I killed a black and a teal on the first day of the season. Altogether I have killed two blacks, three woodies, and a teal making a total of six ducks for three hunting trips. I hope the other readers are having good luck also.

While I am on the subject of ducks, I would like to say that fish ducks, or mergansers, can be very tasty if properly prepared. Many people simply throw away the fish ducks they kill. After you kill the duck, dress and clean it just as you would any other duck. Then put it in a pot of water and put in about two to four tablespoonsful of salt and soak the duck over night. Afterward, prepare the duck (merganser) the same way you would prepare any other duck. The way we fix them is to put them in a pan with a lid, pour in about 1/2 to an inch of water, squeeze orange juice over the ducks and cook them in a 425° oven until done. Soaking the ducks takes out the fish taste as well as the undesirable "wild" taste. As a matter of fact, we soak all ducks and squirrels before cooking them. Give those fish ducks a try, I believe you will like them.

Keep up the good work on your fine Magazine. JIMMY C. REGISTER. WILMINGTON

Send duck bands to: Division of Game, Wildlife Resources Commission, Raleigh. Thanks for the recipe for pre-cooking treatment of mergansers. Although the waterfowl season has been closed for a couple of months, some of us will keep your idea in mind for next season.—Ed.

This is Sam K. Gooden, Wildlife Commission wild turkey specialist, now on the job analyzing North Carolina's turkey problem.

National Wildlife Week, March 15-21, 1964

America Needs Outdoor Recreation

Act Now to Provide for the Future

If you and your family have found it difficult, over the past few years, to find a quiet, uncrowded area to swim or picnic—imagine what citizens of the year 2000 will experience when they have to compete with an additional 180 million people for outdoor recreation sites.

Adding to this confusion will be the fact that people will have more free time, more money, and easier, faster means of travel.

Fortunately, we can do something about this national problem if we act now. The three-year study of the Outdoor Recreation Resources Review Commission has established guide lines and suggestions for providing the future Outdoor Recreation needs of the American people.

Here are the important steps that must be taken:

1. Additional outdoor recreation areas should be acquired promptly and protected.
2. More money is needed for development and maintenance.
3. The outdoor recreation potential of public lands and other government programs should be vigorously exploited.
4. We should make better use of what we already have.
5. A variety of techniques should be developed to make private land accessible for public recreation use.
6. Better organization and planning are needed.
7. Outdoor recreation resources should be classified and managed to provide for a wide variety of activities and values.

Individual citizens or groups can join together and work with local and state and Federal agencies to encourage and implement an Outdoor Recreation program for the benefit of all the people.

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NATURE'S Camouflage Experts

WOODCOCK The woodcock is an excellent example of what is called "cryptic color-ation". It takes sharp eyes indeed to spot this bird before it takes wing.

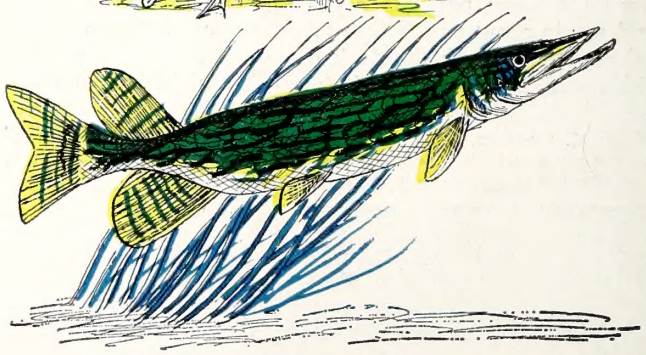
LEOPARD FROG Most frogs display what is termed "counter-shading"; that is, the underside is lighter than the top, thus offsetting the shadows, hiding the frog.

COPPERHEAD The mottled coloring of the copperhead perfectly matches the shades of dead leaves and other vegetation.

FAWN The unusual markings of the young deer blend with many forest backgrounds. It remains perfectly still, thus unseen.

FLOUNDER This familiar coastal fish can alter its color pattern in an attempt to match its sandy backgrounds. It can even produce a checkerboard arrangement when necessary!

Bob Shell



CHAIN PICKEREL The chain-like markings which give rise to its name, hide the pickerel among the strands of water weeds. Most fish are well camouflaged.

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Wildlife in north carolina

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april 1964

Jim Lee

Up In Smoke

With startling speed and intense fury, wild fire sweeps the forest. Everything in its path is laid waste and it will be years before Nature can repair the damage done. The spring season is the peak fire period; don't let this happen.

State of North Carolina

TERRY SANFORD
Governor

North Carolina
Wildlife Resources Commission

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LEE L. POWERS, *V. Chm.* ..... Lake Lure
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Wildlife in north carolina

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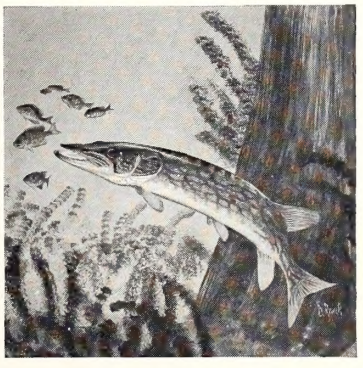
COVER

The eastern chain pickerel is one of our more efficient underwater predators. He is built for speed and quick movements and is a model of camouflage. Rarely is the pickerel found far from some sort of vegetation and often the denser the better. He carrys the nickname of "jack" in much of his natural range of the coastal plain, although he is called many other things—particularly by bass fishermen. Opaque water-color painting by Duane Raver.



WILDLIFE IN NORTH CAROLINA recognizes the need for close cooperation between State and Federal conservation agencies and the people who hunt and fish—to bring about a restoration of our renewable resources. The Editor gratefully receives for publication news items, articles, and photographs dealing with the North Carolina out-of-doors, but reserves the right to reject materials submitted. Full credit is given for all materials published.

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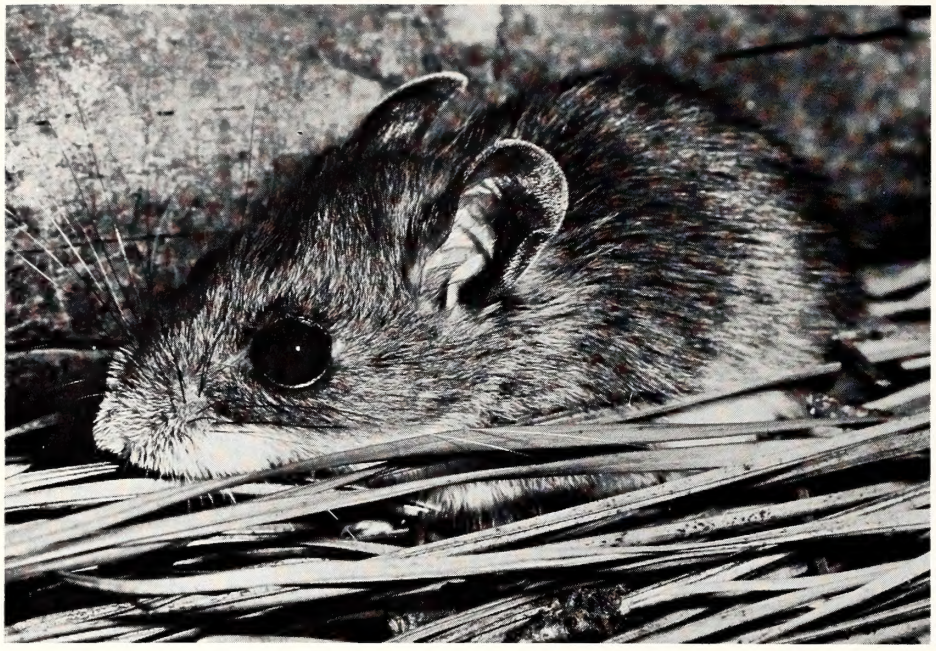


Deer Mouse

Animal Eyes

by Joel Arrington

AFTER having viewed the animals in a zoo several times within a short period of time, you may think you have reason to begin to get a little bored. Same old birds, same old unmoving reptiles, same old bear pacing back and forth.

Then the wife's brother and all the kids drop in for the week end and the little ones insist on seeing the animals at the zoo. Just the thought of another day of staring at jabbering monkeys and strutting peacocks takes the starch out of you. Cheer up! You can interest yourself in the familiar creatures there by looking at them in a slightly different way. Take the eyes, for instance. Ever notice how eyes differ from one animal to another? Ever wonder **why** eyes are so different?

Walk through the zoo again and notice particularly the position the eyes occupy on each animal's head. You will observe that some animals carry their eyes on the side of the head, others have them placed more toward the front—directed forward, and a third group has eyes situated midway between front and side.

If you were to take notes on the placement of the eyes, you would have a list something like this:

Eyes placed frontally—the zoo keeper, chimpanzee, baboon

Eyes placed obliquely—fox, bobcat, wolf, mountain lion, bear, eagle, hawk

Eyes placed laterally—most of the fish, reptiles, birds and mammals

Your list will indicate a very interesting principle of zoology—that is, in general, animals which are hunted (most animals) have eyes placed on the sides of their head, while animals which are hunters have them placed more forward on the head. You will see the relationship between eye position and intelligence. Animals which see best straight ahead have a higher degree of intelligence than those which see best to the side.

Why, we might ask, is forward vision better for the hunter and side vision better for the hunted? The answer is clear when we examine the two accompanying sketches. The fox sees an object in front of him with both eyes; that is, the image perceived by one eye overlaps the image perceived by the other. This is called "binocular vision." Man has binocular vision to a great degree. You can demonstrate it, or the lack of it, by closing one eye and trying to thread a needle held one foot from your nose. You see that you have little ability to perceive depth with one eye—you have used "monocular vision."

In all animals, eye position is related to feeding habits, among other things. An animal which hunts other animals is aided by frontal vision because of the convenience for attack and pursuit and the greater accuracy of striking permitted by binocular vision.

While carnivores rely on frontal vision for hunting ability, vegetarians rely on side vision for fleeing ability. Look at the sketch of the rabbit. You will see that his blind area is very much smaller than that of the fox. But so is his area of binocular vision. A rabbit needs vision all around him while he is feeding so that he can see an approaching predator.

We might conclude then that the position of an animal's eyes is related to his way of life. But what other characteristics of eyes do we notice? There is the size of the eye, the size and shape of the eye socket, the type of pupil in the eye, and the type of eye-covering, among other things.

Nearly all animals respond to light in some way. Even the eyeless, one-celled amoeba perceives light and reacts to it in a primitive way. The light waves act directly upon the tissue of the amoeba and bring about a retreat-response. The simplest type of eye is nothing more than a pit lined with light-sensitive cells. We find this type of light-receptor in the flatworm. Even the mole, which has very small, almost useless eyes will, when placed in strong daylight, try to return to complete darkness.

The mole, we observe, has short legs and is incapable of traveling very far in search of food. Animals with good vision travel some distance, usually, to get their food. There is a relationship then between acuity of vision and length of limb.

Vision is related, first, to the safety of the animal, second

Eyes in the animal world vary in effectiveness. The duck hawk can often detect small movements of its prey at long distances.

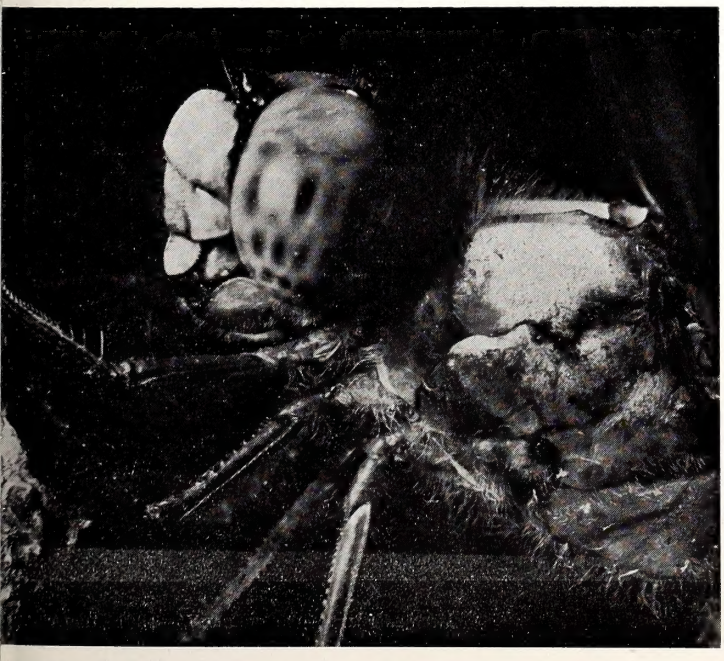
Underwater eyes are usually built for close-range vision. Fish that feed at night ordinarily have large, light-gathering eyes.

to its nutritional requirements, and third, to its urge to mate. The degree of vision each animal has is related to its requirements, its mode of life, and its environment. Animals which do not see very well have increased abilities to smell or hear, or they are protected by their color. Animals with poor vision are invariably supplied with some compensating features which prevent the species from falling easy prey to predatory enemies. If these features are not present in lieu of vision, the animal has little chance for survival. A blind rabbit has virtually no chance of surviving predation or starvation, for nature has no mercy for the weak.

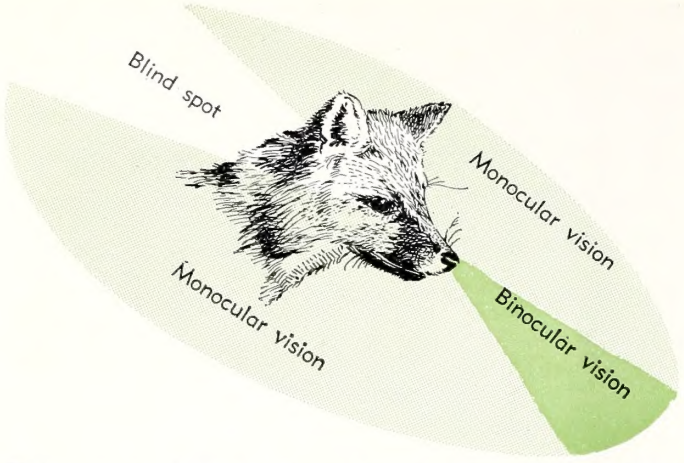
Think of the animals in the zoo again. You will remember that some of the animals such as the zoo keeper, the mole, the elephant and the hippopotamus have small eyes in relation to the size of their skulls, while others, such as some of the monkeys and most of the birds and frogs, have large eyes compared to the skull size. Man has small eyes and a large cranium, while a sparrow has eyes which occupy so much space that there is little room left for a brain, or for eye muscles. To compensate for few eye muscles, the sparrow has a long flexible neck and moves its head rather than its eyes.

Most animals can move their eyes within their sockets, but others can move them but little, or not at all. The owl, for instance, cannot move its eyes much, but it is capable of swiveling its neck 270 degrees and of turning its head upside down. The fish is able to look one way with one eye and the other way with the other. This way he has a fairly wide view of his food as well as of potential enemies. The lizards

How many eyes? This dragon fly actually has thousands of units in each compound eye. Slightest movement can be seen.



This toad, throat aflutter, seems to have blood-shot eyes. He is ready to spot tiny insects that come in range of its tongue.



Vision areas and blind spots are shown in these diagrams of the hunter, a fox (above) and the hunted, a rabbit. Details in text.

and most fishes can move their eyes independently of each other, but mammals must move their eyes together.

A good eye, like a good camera, must have at least three characteristics if it is to respond efficiently to varying conditions of illumination. Both must have a good lens, a lens shield, and an iris diaphram.

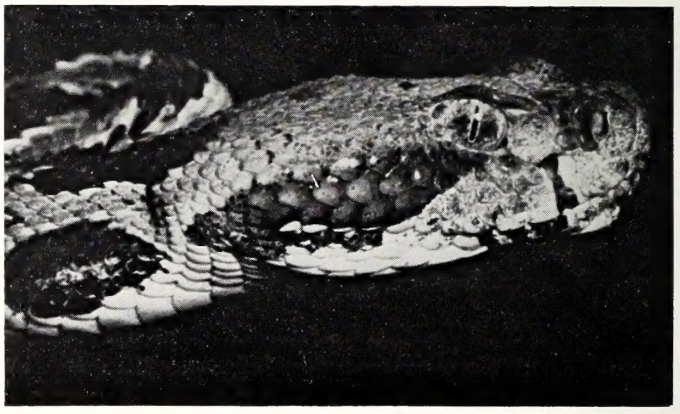
A good large lens is superior to a good small one, but a large lens has it limitations. It may, for example, pick up reflections from objects other than those one intends to photograph. A lens hood shields the lens of a camera from extraneous light, while the eyelids, in many animals, shield the lenses of the eyes.

The third necessity, the iris diaphragm, serves in a camera and in the eye to cut down the entering light when required, always passing enough light to produce an image of the required intensity.

Many animals have the ability to reduce the size of the diaphragm, which we call the pupil, at will. Man, however, does not control his pupil voluntarily, but its diameter changes automatically in response to varying amounts of light falling upon the eye.

Pupils also respond to stimuli other than light. The most common of these is fear, anger, or lack of oxygen in the blood. Pupils dilate when the oxygen content of the blood is reduced by exercise.

The shape of the pupil in animals varies greatly. Sharks, skates, and rays, as well as most bony fishes, have round pupils. Crocodiles, nocturnal reptiles, many carnivores, and a few other animals can constrict their pupils to a vertical slit, while some sharks close their pupils to a horizontal slit. Some frogs and toads, reptiles which feed by daylight, most kangaroos and the hippopotamus have a horizontal oval pupil.

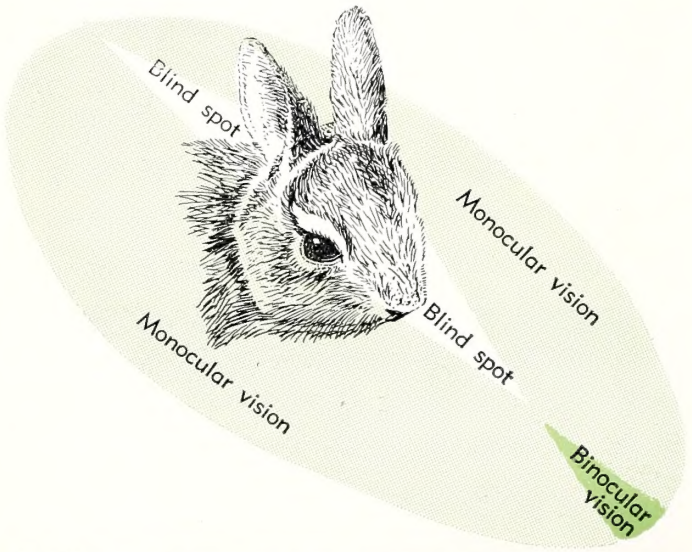


The vertical, elliptical pupil of the copperhead is the typical shape for poisonous snakes. Harmless snakes have round pupils.

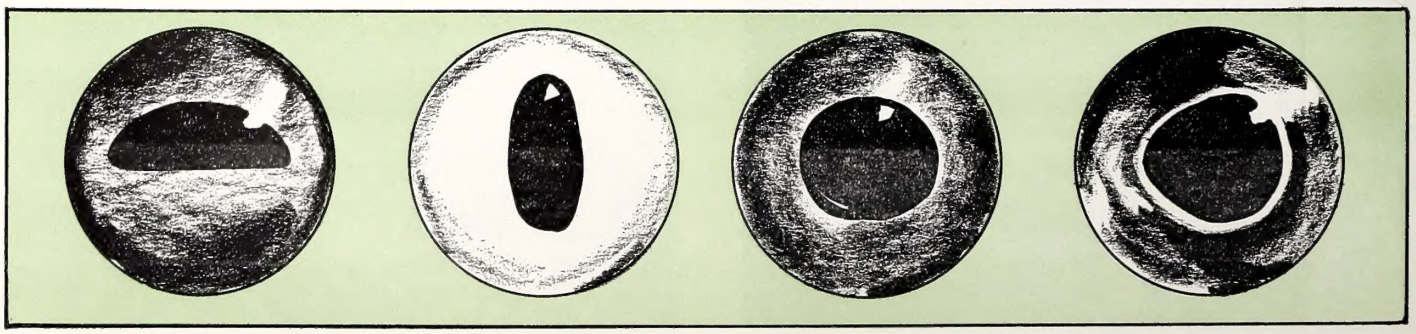
Most foxes have pupils which contract to a vertical ellipse or slit. See the accompanying illustrations for some varieties of pupils.

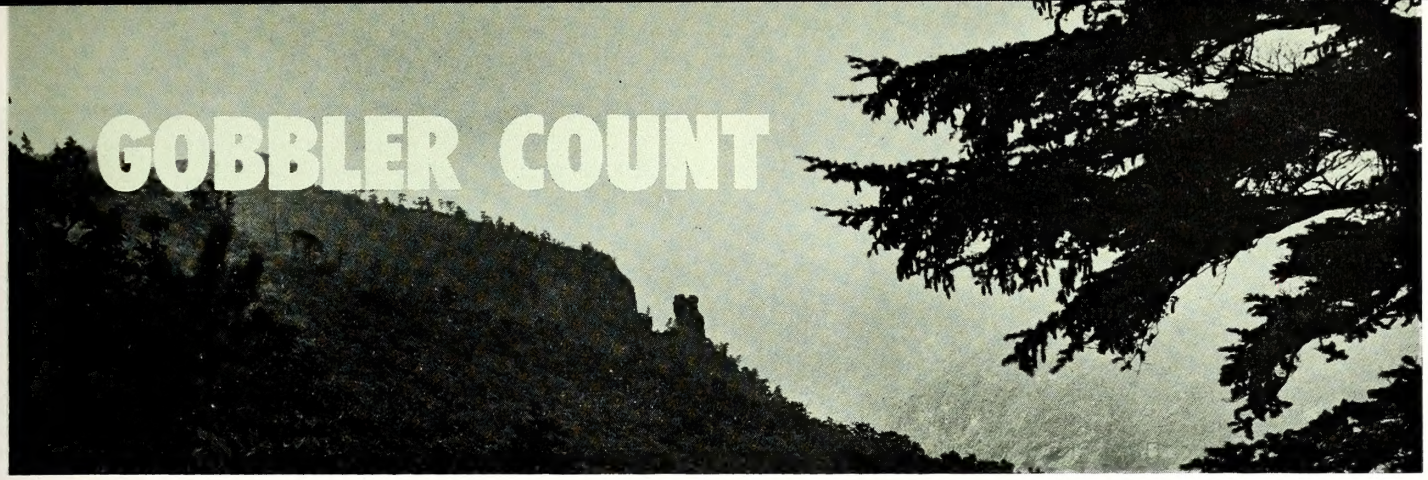
Many insects have eyes which appear to be entirely different from the eyes of other animals. But they all work on the same principles. The dragonfly, for example, has two large compound eyes and three simple ones. The compound eye is made up of many small eyes placed close together. The dragonfly has about 30,000 units in each compound eye. Insects which are out and about at night do not have compound eyes, but rely on their well-developed antennae for sense-data.

From studying the various types of animal eyes, we learn that in spite of external differences, all eyes are very much alike. Eyes serve different animals in different ways and each one's eyes are adapted to its particular mode of life.



The diagrams below show some various pupil shapes found in the animal world. From left to right they are eyes of the deer, the fox, most dogs, and a representative fish eye. The pupil size and sometimes the shape, change in different light intensities.





GOBBLER COUNT

By Thad Cherry

District 7 Game Biologist

THE air was quite chilly as I groped my way up the rough mountain trail. The whip-poor-wills' eerie chorus filled the still, early morning darkness. I could scarcely see ten feet ahead, but the stout bicolor walking stick in my hand made me feel a little more secure.

I reached the top of the knoll and found a stump upon which to sit. The black velvet of the night soon began to fade. The towering hickories and oaks became more clearly visible. The continuous chorus of the whip-poor-wills began to break as the nocturnal animals began to sense the approaching close to another night's activities.

I was quite startled as the leaves and underbrush rustled nearby, and found myself clutching the walking stick more tightly. But I relaxed as I saw two deer, one obviously an expectant doe, cross the trail not more than fifty feet away. They, too, were heading for their favorite sleeping area.

I eased out into the trail and stood motionless, watching the deer disappear into the semi-darkness. As I turned to go back to my stump, I was almost hit by a large owl, as he careened along the trail. Then two bats flitted by and I became aware that foot trails are not used only by ground animals.

A few scattered whip-poor-wills were still calling when the first diurnal life was beginning to stir. A lone cardinal filled the crisp air with his clear call of "purty-purty-purty." In the distance, another cardinal answered. For a few minutes the songs of the cardinals and whip-poor-wills were blended, evidence of the intermingling of the activities of the nocturnal and diurnal wildlife, which occurs with the transition of night to day at dawn.

Just as the last calls of the whip-poor-wills echoed through the dawn air, the mellow whistle of a bobwhite quail was heard. I listened intently, but still had not heard what I was really listening for.

I had been awakened at 3 a.m. by the clanging of the Big Ben alarm clock. I hit the clock, turned the light on, and rolled out of bed. Still half asleep, I pulled on my pants and laced my boots while Jim, still in his bed, was grumbling about the life of a biologist.

So we stepped out on the walk in front of the motel, and saw several of the other fellows standing under a light, looking at a map. We had held our briefing the night before, and each of us knew exactly where he would be standing, listening for the gobble of the wild turkey. The stars were shining their best and promised a fair morning.

We were ready to participate in the annual turkey gobble census. Each year for several years such censuses have been conducted on wildlife management areas by the Wildlife Commission's technical personnel. These men occupy strategically located listening stations throughout the area and listen for the gobbling toms during the dawn hour. This is done at the same locations, at the same time of the year, each year. The information obtained is used as an indicator as to possible increases or decreases in the turkey population.

The woods seemed entirely different now as the crest of the morning sun appeared. And indeed it was different, in that the whip-poor-wills, owls, and other nighttime animals had gone into seclusion, yielding the woods to the animals of the day.

A dove cooed his melancholy song from the uppermost branches of a tall pine. He reluctantly flew to a dead limb of an old oak tree as two gray squirrels scampered out on the pine limb. In another tree, a beautiful blue jay cleaned his beak on a limb, much the same as a butcher would sharpen his knife.

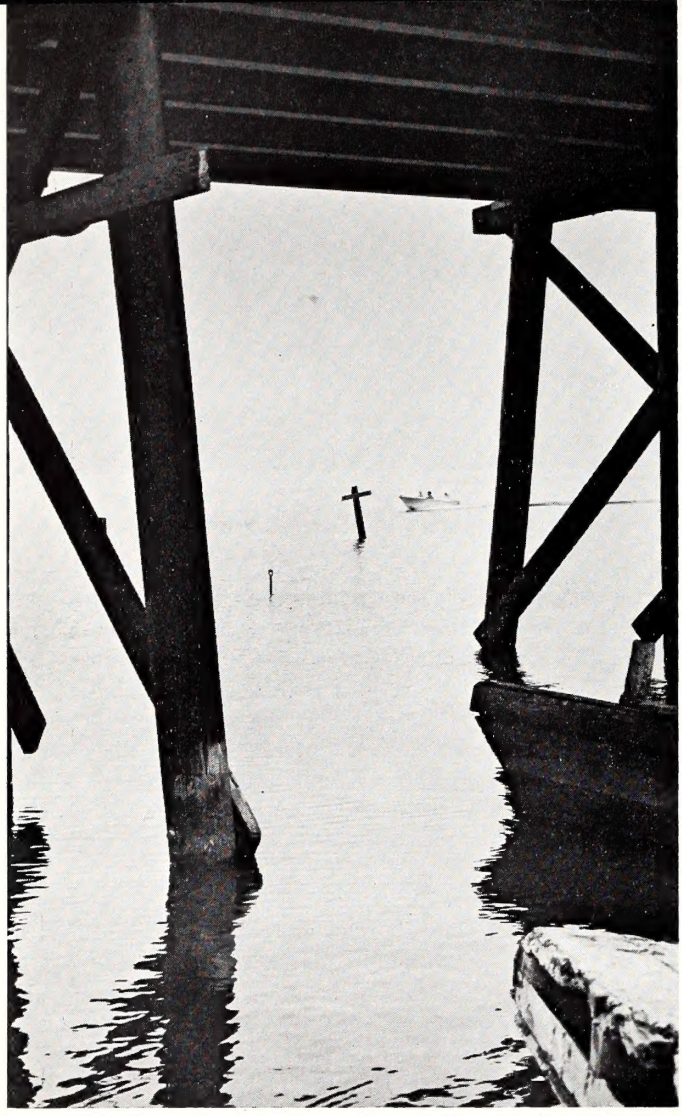
Then I heard it: the majestic gobble of a tom turkey, king of the gallinaceous birds. He was less than 200 yards away. Then he gobbled again as I marked his position on my map. No sooner than I had his position marked, I heard another faint gobble in the far distance. I recorded this one too, and then sat back and listened as the two noble birds boasted of their gobblerhood. The two toms gobbled about every two minutes for a while, and then as suddenly as they began, they were quiet.

Then once again I noticed the two gray squirrels, still chasing and playing in the pine. The dove was quiet, but it was still perched on the dead limb.

I looked at my watch and saw that it was 7:10—time to start back. So I returned down the trail—much faster than I had climbed it—back to the dirt road. Along the trail I saw two sets of fresh deer tracks in the red clay, and a little further along, a late-to-turn-in cottontail scampered into the underbrush.

When I reached the road, I saw the car coming to pick me up. As soon as I got in, I was asked if I'd had any luck. "Heard two," I said, thinking what an understatement that was. When we had all gathered back at the motel for breakfast, everyone was excitedly talking about the things he had seen or heard. All in all, each of us had been exposed to the same thing, and each of us was equally impressed.

So after breakfast we loaded into the cars and headed for another management area in another part of the state, each of us sleepy-eyed, but each of us anxious for 3 a.m. to come. To sit alone on a mountain as the night fades into day, and to hear and see the unmolested inhabitants of nature in their own wild communities, there is no way a man can be much closer to nature, and to God.



Boating Accidents 1963

by Duane Raver

WE often wonder just what value there is in raking through boating accident reports, and further, if any real benefit is derived by the boater when he reads these accounts. Reviewing the individual accident reports can be quite revealing and at the same time, downright frustrating. But to see how we stand on the matter of boating safety, and to minimize next year's water mishaps, it pays to take a sober look at past mistakes.

It is little comfort to those that have been involved in boating accidents to say that there were fewer accidents or not as many fatalities as in preceding years; but it may indicate that our waterways are becoming a bit safer and that many skippers are finally getting smart about small craft operation. In 1960, the first year for which we have detailed reports, 79 boating accidents were reported, with 37 fatalities. The 1961 total reached 87, resulting in 35 deaths; and in 1962 there were 70 boating accidents reported with 39 fatalities. Last year, with almost 45,000 registered boats (those having more than 10 horsepower motors) and perhaps twice this many of lesser powered or powerless craft using North Carolina waters, 68 accidents were reported and the fatalities dropped to 26.

Perhaps we can draw conclusions just from these figures; maybe it's risky. Yet such a sharp decline in the number of boating accident deaths certainly must be classified as significant. The reason or reasons behind this drop is something else to figure out.

There's no denying that some pretty foolish things were done by some North Carolina skippers in 1963. Some got away with it, most didn't. A few of the boaters involved owned up to their carelessness, but a surprising number shifted the blame to another boater, the boat itself, lack of a certain law, or some other pretty far-fetched things. Perhaps it is simply human nature to pass the buck or try to wiggle out of responsibility, but in these cases, such manuevers tend to eliminate the "learning" process of the mistakes which are genuinely ours. In other words, if we made the error, own up to it and profit by it the best we can.

From these accident reports a few things are obvious, not the least of which is that more care must be taken in completing the report forms themselves. To be of optimum value, all the information asked for should be listed, if at all possible. Another thing that soon becomes apparent is that a wide variety of accidents happen on water. The pattern of causes is actually no pattern at all. It would be far easier to point up the "major causes" of the mishaps if a high percentage loomed up. But aside from lumping most of them under the catch-all of "carelessness" or operator negligence, it is difficult to point out one or two areas of danger. There were lots of causes, some mighty unusual.

This review of the 68 boating accidents involving 83 boats certainly doesn't exhaust the information that could be derived from these detailed reports. Perhaps much of the important information is omitted while some of little help or significance has been included. But there is food for thought, to say the least.

It comes as no surprise that the big months for boating accidents were June, July, and August. These months contributed 10, 18, and 17 accidents, respectively. This does not mean that these summer months are the "most dangerous" but it does indicate that this is the period of heaviest boat usage. February, October, and November had no reported accidents, and January only one while March added three, April and May six each, September five and December two.

Blustry weather, cold water, and heavy clothing may have contributed to a higher death rate per accident in the winter and spring months. At least these are times for extra precautions.

Although most boating accidents occurred during day-light hours, a higher accident rate was noted for night operation. Some of these were attributed to striking unseen, submerged objects which possibly couldn't have been avoided during the daytime. But certainly poor visibility was a big factor at night. Indications were that reduced speed and perhaps a

The West Bend Company

Boating safety starts here. Many small craft accidents could be prevented by just a little more thought and better preparation.

closer watch would have prevented some of these after-dark accidents.

If you like statistics—and these might be important—look at these pertaining to the types of water on which the reported accidents took place: 54 percent happened on lakes—large lakes or reservoirs for the most part; 20 percent occurred on rivers (again, usually a large one); about 13 percent took place on tidal waters such as sounds, bays, coastal river mouths, etc.; five percent on small ponds; four percent happened on the Intracoastal Waterway, perhaps indicating the tremendous use of this passageway; three percent of the accidents took place on the usually treacherous inlets; and the remaining one percent were scattered over a few miscellaneous water types.

Since we have no reliable way of telling how much boat usage each of these water types got, it is a bit risky to attach labels of "most dangerous," etc. on any of them. We do know that lakes and reservoirs receive a tremendous amount of boat usage, but that the more crowded, restricted areas like the Intracoastal Waterway, may have greater traffic problems and therefore a higher accident potential.

The moral here, as everywhere afloat—be careful.

We broke down the boat lengths of those crafts involved in the reported accidents to see if any particular group seemed more accident-prone. Here again, it must be remembered that far more boats of the popular lengths, 12, 14, and 16 feet are in operation than all the rest put together.

Only one boat of less than 10 feet was involved in a reported accident, so we called this one percent. Since several 10-foot vessels appeared in the reports, we singled out this length, and found that four percent of the accidents involved this boat length. The 11 through 15-footers represented 27 percent, but the 15 through 18-foot class showed up in 57 percent of the mishaps. Six percent of the craft reported were 19 through 26-feet and 3 percent were over 26-feet in length.

In the matter of horsepower and the craft involved, it appeared that more boats had larger motors than in the previous year. For example, the big group of vessels having motors of 26 to 100 horsepower rose from a representative 60 percent of the accidents in '62 to 68 percent in 1963. Looking briefly at the total break-down, 7 percent of the boats reported were unpowered; 4 percent carried motors of 1 to 8 horsepower; 7 percent had engines of 10 through 15 horsepower; the 16 through 25 horsepower group made up 6 percent; 26 horsepower through 35 horsepower, 10 percent; 20 percent had motors of 36 through 50 horsepower; the largest percentage, 30, was represented by craft powered by 51 through 75 horsepower engines; 8 percent had motors of 76 through 100 horsepower; and the vessels of better than 100 horsepower made up 8 percent of the total.

General operation at the time of the accidents was divided into seven rather broad catagories, with "cruising" mentioned in roughly 50 percent of the 61 accidents where activity could be pinned down. Next in frequency with 18 percent was water skiing; simply "drifting" added up to over 8 percent, and fishing, docking, at anchor, and refueling made up the remainder of the total.

More rough water is encountered when we get to the important "what caused the accident" determination. Often the boat operator disagreed with his passengers or other witnesses. And rarely did the skippers of craft involved in collisions agree as to the cause or where the fault lay.

It is a bit unrealistic to say that the cause of a particular boat accident was "capsizing" and expect to get the picture clearly. Why did the craft upset? And then what could have been done to prevent the accident. After all, this is the primary purpose of this analysis anyway. And it appears to be the most difficult to seek out.

Without discussing each individual accident (and this is just about what we'd have to do to see the entire picture) we might generalize a bit. Conclusion number one, after reading the reports, thoughtless carelessness still looms large as a prime factor in many, many boating accidents. Failure to do "something" at the right time, or the unlucky choice of doing something at the wrong time; these are the culprits.

Of course, looking back on any accident, boating or other-

As the skipper, you are responsible for a valuable cargo each time you take to the waterways. Boating can be a safe sport.

Johnson Motors

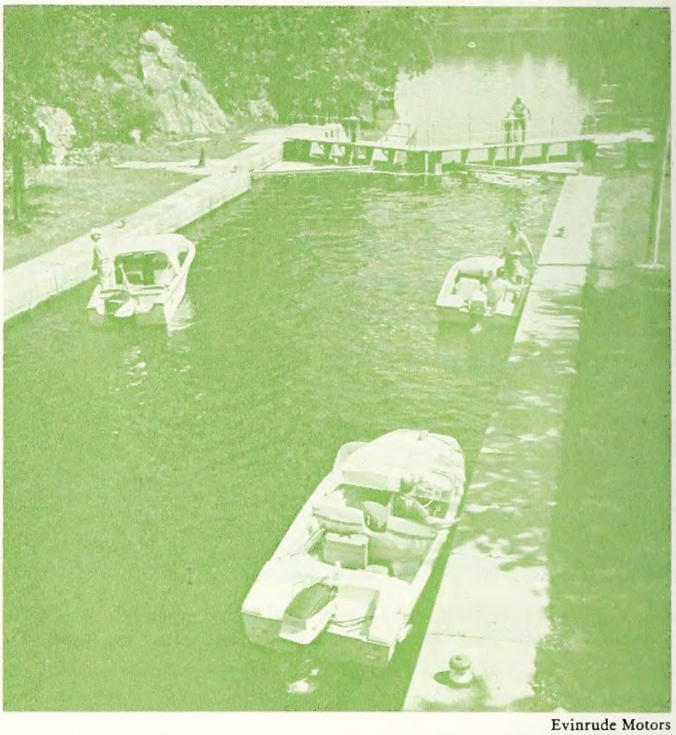
wise, it is comparatively easy to pick out mistakes and courses of action that should have been taken. Yet, we must be critical if we are to learn. It is about as bad to select the wrong factor, or point the finger at the wrong individual.

We can't help but wonder just how many "near misses" and close calls are **not** represented here; potential accidents looking for a place to happen. These, too, should be cataloged in the backs of our minds for future reference.

High speed by itself is generally not hazardous. But when combined with any one of a hundred other factors—some minor—can and did contribute to many accidents afloat. Although it failed to crop up often enough to really stand out, rapid acceleration of a small boat and a big motor created some dangerous situations. The bow comes up quickly and sharply, thus obstructing the view of the skipper for a few seconds. This is often time enough to strike a floating object or another boat skimming into the pathway of the accelerating vessel. Perhaps this indicates over-powering of a boat; perhaps simply bad judgment on the part of the skipper. In several cases, speed directly contributed to trouble where a concentration of other craft was present: around docks, in channels, where ski boats were numerous, etc.

Even when a boat struck an unseen, submerged object such as an underwater piling, water-soaked log, or a rock, a slower speed might have lessened the seriousness of the accident. (One skipper commenting on his encounter with a series of stumps in fairly shallow water, said he thought that all such underwater objects should be marked! (Quite a job.)

But you decide. Here are just a few of the almost infinite variety of boating accident causes: man knocked over-board by low-hanging limb as he was standing up, refueling motor; an inexperienced skier slammed into the bank after building up terrific speed on a turn; fog rolled in, skipper steered boat between two lights near shore which he thought marked opening under bridge, but turned out to be boat house lights; fisherman parked near large power dam (signs indicating danger were well-posted) when suddenly an additional turbine went into action, swamping the boat in a matter of seconds; boat smashed into bank while operator was adjusting motor carburetor; water skier waved at crowd on pier behind him, slammed into slightly longer pier while looking back (boat operator reasoned that there should be a law on the maximum length of piers!); motor was started in gear with throttle advanced, and standing passenger was thrown out; had



Evinrude Motors

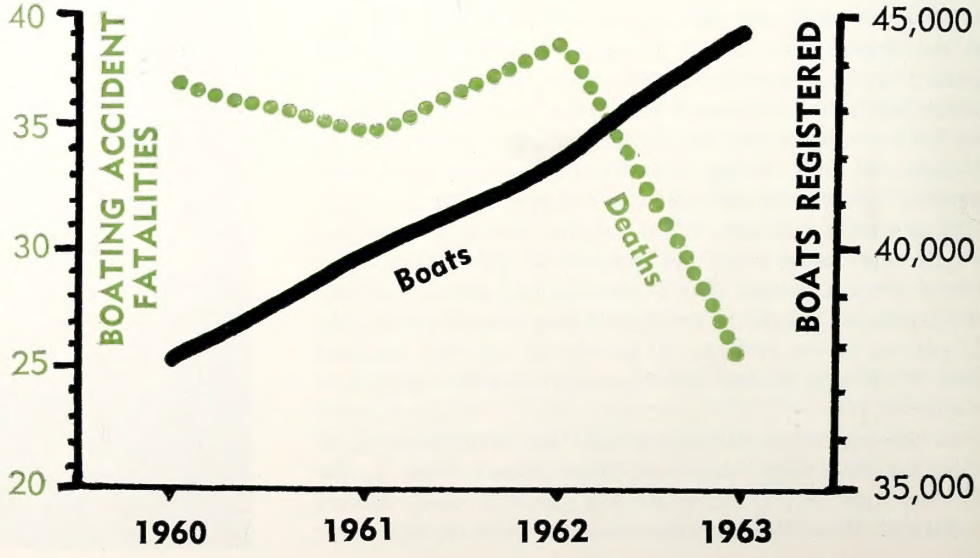
More than caution is required in many boating situations. Here, small boats are being locked around some sort of hazard.

enough? Mighty few were "unavoidable" accidents; about the only case reported that fits this category was where the boat was struck by a freak bolt of lighting;—shouldn't have been out in bad weather, you say?

Fires on board, along with explosions, took an ominous upswing in 1963. In a case or two, the blaze was extinguished with equipment on board; but too often, flames engulfed the craft to such an extent that available fire-fighting gear was ineffective.

What's the answer? Well, obviously there isn't a single answer to these accidents and not even a long list of precise "don'ts" will eliminate these grim statistics. There is a measure of comfort in the fact that in spite of crowded waterways, more and larger boats and motors, and more inexperienced boat drivers, boating accidents have not sky-rocketed, and have even declined a bit this last season.

About the season that is almost on us? That, Skipper, is up to you.



Perhaps with ten years of information, a graph of this type will look different. So far though, our boating accident data indicate that there is at least the start of a downward trend in fatalities resulting from small craft mishaps. One thing we tend to forget when we look at such accident statistics is the fact that the number of boats in use is going up every year. Let's keep the line shown here in color, going down!

NORTH CAROLINA WILDLIFE

RESOURCE-O-GRAM

A ROUNDUP OF THE LATEST WILDLIFE NEWS

Mountain Trout Season Opens April 4, 7 a.m.

One of the biggest armies of trout fishermen in Tarheel history is expected to head for the hills Saturday, April 4 when the mountain trout fishing season opens on some 1,800 miles of designated public mountain trout fishing streams. By that date, pre-season stocking of hatchery-reared fish will have been completed. Before and during the season about 660,000 keeping-size trout will be released. Special trout fishing regulations for National Forest, National Park and Wildlife Management areas have been published and are available from the respective Service offices in Asheville and the Wildlife Resources Commission in Raleigh.

Are You Ready For the Boating Season?

The pleasure boating season gets under way during the month of April, and power boat operators are warned to have their craft duly registered, numbered, and required safety equipment aboard. Only boats powered by machinery of more than ten horsepower are required to be registered and numbered, but all boats powered by machinery must have an approved lifesaving device for each person aboard the boat while it is in operation, plus a white light mounted on the stern or a flashlight in working condition aboard for operation at night.

Striped Bass Hatchery Readied for Action

Division of Inland Fisheries personnel are in the process of getting the world's first striped bass hatchery ready for the annual spawning run of striped bass at Weldon. The run usually begins in mid-April and reaches its peak during May, depending on water temperatures.

More Kokanees in Nantahala Reservoir

Some 200,000 kokanee salmon eggs have been shipped to North Carolina from the West Coast for hatching and stocking. Fry hatched from the eggs will be stocked for the fifth time to establish a self-supporting resident population in the reservoir. Kokanees have turned out to be a fine game fish as well as forage species for rainbow trout.

Springtime deserves a bouquet of orchids, and here they are (above) the waxy, **yellow lady's slipper.** Please don't pick! The **bird's foot violet** is a colorful, pinewoods flower (left). Nature develops the flower of the **meadow violet** (below), under ground.

ing

s Flowers

Photo Feature by Joel Arrington

Not often do we see this plant (below) without two lavender-colored flowers, hence its name, **twin flower.** Look for it in woodsland areas.

The **rue-anemone** or wind flower (above left) quivers at the slightest breath of air. The unique action of the leaf of **Venus's flytrap,** often makes us forget its dainty flower (left). The name of this plant (below) is also its description: **green and gold.** It is one of our most common spring flowers.

Turkey Hunting versus Turkey Shooting

by Parker Whedon
President, North Carolina Turkey Hunters Association

WHAT is this sport called turkey hunting? What is it that gets such a hold over a man and fills him with such fanatic zeal that he will hunt day after day without success and continue hunting with even greater enthusiasm than that which he had when the season began? What causes an otherwise responsible, educated man to quit his regular employment when turkey season comes in and take menial, odd jobs in order to keep his time free for turkey hunting? Why is it, in the words of a distinguished wildlife commissioner and journalist, that "when it comes to 100 per cent, 200 proof, pure quill dedication, there is nothing like a turkey hunter. Nothing at all."

Certainly, the grandeur and elusiveness of the quarry has much to do with this fervor. But let us examine the elements of turkey hunting to ascertain the real reasons why hunting the wild turkey has been called the "finest sport on earth."

In the traditional turkey hunting of North Carolina, which for more than two hundred years has been a fall and winter proposition, the first problem faced by the hunter is that of locating the general range of a flock or gang of turkeys, which range may encompass several thousand acres. The solution to this problem involves the locating of turkey sign on the ground and in the leaves, such as tracks in muddy places, scratching in the oak leaves, and feathers and droppings in the vicinity of roosting and feeding sites. The hunter's next problem consists in narrowing this general range to the point of being able to determine the approximate present whereabouts of the turkey flock. The solution to this problem involves the ability, which can become highly refined in the experienced hunter, to determine the freshness or age of the scratching or other sign being examined, the probable number and sex of the turkeys which made the sign, their direction of travel and probable destination.

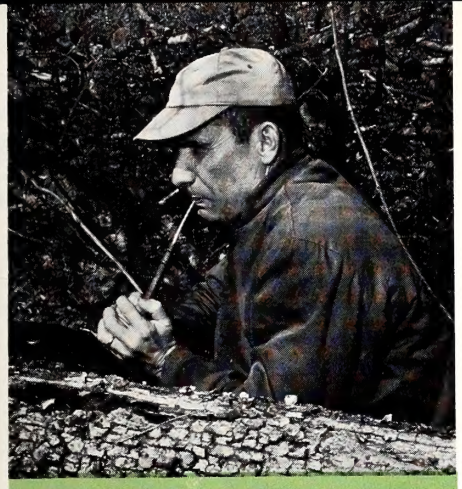
Once in proximity to the turkeys, the hunter enters the next phase of his sport, which is that of scattering the turkeys, his purpose being to separate them from each other and then attempt to take advantage of their gregarious nature by calling them back to the place from whence they were scattered. A flock of turkeys can be scattered either with a good turkey dog trained to rush barking into the flock, or in still hunting, by getting close enough to the turkeys to scatter them with gunfire. Once the dog has flushed the turkeys, his job is over except, perhaps, for retrieving a crippled turkey, and he is tied down securely in the blind.

Having scattered the turkeys, which means observing that a substantial number of them actually ran or flew off in different directions instead of in the same general direction (in which event trying to call the turkeys would be useless), the turkey hunter then carefully proceeds with the remaining delicate steps involved in his tradition. He constructs a proper, sight-proof blind from natural materials close at hand—logs, brush, cane, pine or holly branches, etc. —being careful neither to underbuild the blind and be revealed by the unparalleled vision of the wild turkey, nor to overbuild it and become an object of suspicion. It has been observed by naturalists that the wild turkey has the keenest vision of any wild creature, with an estimated optical power the equivalent of that of 9X binoculars. It is therefore the **sine qua non** of turkey hunting that all movement be either eliminated or totally concealed. Many words could be written on the art of blind building alone.

When a proper blind has been constructed, the hunter then gets into it or, if the turkeys have been scattered too late in the day to expect them to reassemble, he returns to his blind before daylight the following morning. The general rule is that if the turkeys have been flushed in the morning they will probably get back together before dark, but if they are flushed in the afternoon, then not until the next day. As often as not, a successful turkey hunt is a two-day proposition.

After all these labors, the moment has arrived which the hunter has spent so much effort, experience and skill in endeavoring to create: namely, the moment for calling the turkeys. With one of a nearly endless variety of calls invented by the ingenuity of Indians and pioneer Americans — a variety which includes cedar boxes, wing bones, jointed cane sections, alder stalks, snuff boxes, gibson calls, rubber tubes and cow horns, briar leaves, small lead horseshoes with rubber diaphrams—the hunter gives out a few well-practiced turkey notes, bearing in mind that in the fall and winter turkeys make a variety of yelps, clucks, whines, squeals, kee-kee notes and other

To some turkey hunters, this act of flushing the birds presents an opportunity to bag a turkey. To others, it scatters them to be called up later.



Will they come? This is the sport of turkey hunting, not pulling the trigger.

sounds with which he must be familiar and able to imitate. He must be able to tell the difference between hen calls and gobbler calls and he should call neither too much nor too often. The tense period of waiting, listening and "talking" to answering turkeys, if any, then begins and, if eventful, merges into the even tenser period of breathless expectancy as an old gobbler, the very picture of alertness and caution, furtively approaches and circles the blind just out of gun range. That he is a gobbler rather than a hen is readily discerned not only by his beard but by his larger size and distinctly darker coloration. Finally, he is tempted into range, the shot is fired and the most magnificent prize in all the wilds is reduced to possession.

From the foregoing description, from which many details have been omitted, it should be very apparent that the essential and basic appeal of this great sport of wild turkey hunting in fall and winter lies not in the mere act of firing a gun, but in the learning and exercise of the skills and woodslore which are so vital to the sport that without them the sport would not exist. The sport consists in the attempt to outwit the wariest creature in the woods at the time when he is the wariest. The final stroke of achievement, that of shooting the turkey, while admittedly a glorious moment, becomes an almost incidental thing compared to the skilled process of bringing him into range. This is why the term "turkey shooting" is such a grossly inaccurate and insulting misnomer when applied to the traditional art of turkey hunting by those who know little or nothing about it.

Fall and winter turkey hunting, even when dogs are used for scattering, thus involves the fullest participation of the hunter at every stage, drawing upon his mind, his skill and his experience—his marksmanship and the act of pulling the trigger being the least significant of his acts. Turkey hunting is **hunting** in its highest and most exacting form, and is as different from mere shooting as day is from night.

By contrast, in the spring shooting of wild gobblers, every one of the foregoing skills and aspects of woodslore is completely eliminated with the solitary exception of the ability to imitate one simple turkey call, namely, the love call of the hen. The need for scouting the range, the ability to read and interpret ground sign, the scattering of a flock of turkeys, the training, ownership and use of fine turkey dogs, the building of a blind, the need for recognizing and being able to reproduce a variety of turkey sounds, in short, the essence of traditional turkey hunting is lost with a spring gobbler season.

The reason why these things are lost is that in spring gobbler shooting one is confronted with a vastly different situation than in fall and winter turkey hunting. In springtime, the hunter is dealing not with an incomparably suspicious flock of turkeys but with a sex-mad creature who broadcasts his whereabouts with loud gobbles to everyone within a mile — thus completely eliminating all necessity for hunting—and will frequently come, sometimes on a dead run or even flying, to the most amateurish of calls. The same gobbler, in fall or winter, could be taken with only the greatest skill and patience, if then.

Without exception, all of the turkey hunters of my acquaintance would prefer to spend an eighty-day winter season, with all its difficulties, attempting to bag one wily gobbler than to spend a three-week spring season in killing five gobbling fools. The reason? It is the same as that of the man who prefers hunting coveys of quail with prized bird dogs to whistling up bob whites in May, or that of the man who prefers fly fishing to fishing with a net. One is the sport that he lives for; the other is something he cares nothing about. As one turkey hunter so aptly expressed it, "I wouldn't trade one day of my fall turkey hunting for a whole season of spring gobbler shooting."

It is perhaps only natural that persons who are not familiar with turkey hunting would think that the main thing is to shoot a turkey and bring him home and put him on the table, regardless of methods or season. Accordingly, it is a very easy thing to say—to the other fellow—"you must give up these silly methods and traditions of yours, they are not logical." However, no one is better qualified to define his own sport than the sportsman himself, and woe be to the person who would cause him to give up his bird dogs and covey hunting in exchange for whistling up bob whites in May, or his split bamboo and dry flies in exchange for a net, or his fox hounds in exchange for a predator call! In turkey hunting, a change in season means a change in sport.

Wildlife administrators are naturally interested in improving hunter success ratios. Turkey hunters are the first to agree that the hunter success ratio on turkeys would substantially increase on changing from winter turkey hunting to spring gobbler hunting; but apparently wildlife biologists do not realize that the turkey hunter is not interested in this kind of increase, and is in fact absolutely opposed to it when it involves giving up to any degree the sport for which he lives. We turkey hunters in North Carolina do not even argue that spring gobbler shooting is biologically unsound under properly controlled conditions, such as in management areas. It is simply that we have no interest in such shooting, especially if it means giving up any portion of our traditional sport. We are afraid that a spring season of any length whatever would of necessity shorten or eliminate our beloved fall and winter turkey hunting season.

The challenge of hunting during the traditional season from Thanksgiving to February 15 is fraught with such difficulties that the hunters who bag the season limit of two gobblers by legal means are few, and the annual surplus of turkeys is never removed by such legitimate hunting. Consequently, in our view, the Wildlife Resources Commission is entirely right in concentrating its efforts upon reducing the illegal kill and in restoring genuine wild turkeys to areas which, once destroyed as turkey ranges, have again become suitable habitat.

We turkey hunters are grateful for the increased efforts made by the Wildlife Resources Commission to preserve and improve our sport. Increased fines for illegal killing of turkeys have been enacted, a wild turkey management specialist has been employed for full-time duties in the field, a stepped-up program has been initiated to trap wild birds in areas of relative abundance for removal to areas where there are no turkeys, and surplus deer are being traded to another state for additional wild turkey stock. While all of these steps are commendable and much needed, as this new program develops let us not lose sight of the fact that turkey management is one thing and turkey hunting another, and that in altering our turkey hunting season there would be much more involved than merely changing the hunting dates. Such alteration would mean changing the entire concept and tradition of turkey hunting as it has been known, loved and practiced in North Carolina from time immemorial.

Let us also not lose sight of the fact that it is the sport and not the meat on the table that is important. Our native wild turkey is much too noble a trophy to be assigned the ignominious fate of a statistic on a hunter success ratio chart or a mere target for "shooting."

A Glimpse

by Luther Partin

Here is a brief look at a bygone day, perhaps never to return. Were these days of more game, better shots, and loftier sport? What sort of wildlife tales will our generation be telling in 2010?

Although they are two generations apart, Newton Bryan and his granddaughter seem to have a similar vitality about them. Very likely, much of Mr. Newton's enthusiasm for life in the out of doors will be transmitted to this new generation.

"THEY shot, broke their guns, reloaded and put them back together and shot again in a few seconds." As his mother related to his father at the supper table the amazing thing she had witnessed that day, Newton Bryan, then a Chatham County boy of eight, first heard of the breech-loading shotgun.

Now a seasoned 87 years of age and still active and mentally alert, he has observed most of the major improvements made in the firearms field since the early blunderbuss. Mr. Bryan now has several muzzleloaders, all in firing condition, as well as the caps, powder and shot needed. He also owns guns representing all the major changes made in shotguns during his lifetime. Two notable examples are a Fox Sterlingworth 20-gauge double barrel and a 12-gauge Browning semi-automatic. He thinks these guns represent the best of their respective types. But he hastens to add that, in his opinion, the only advantage they have over the old percussion cap shotgun is the speed of firing available to the hunter. In fact, he states, a hunter could easily waste shells and get less game using modern guns. The knowledge that you can shoot once or twice more, often inspires bad shooting.

When stories of the hunting of yesteryear are told, wild turkeys are there.

The hunter who knows he's going to get one shot, or at best two, before having to measure powder and shot and reload, will learn to pick his shots carefully and make them count. The muzzleloading gun offers a wide range in powder loads and in sizes and loads of shot. Each load can be tailored to fit the type of game, the distance, or the shooter's preference. The growing number of shooters using muzzleloaders today seems to bear out this theory.

Mr. Bryan is a life-time resident of Chatham, never living more than three miles from his place of birth. He loves dogs, guns, and hunting and recalls hunting most of his life. Beginning as a boy of ten, he still has the gun he used to kill his first turkey at the age of fourteen. He admits to being a little nervous on the first one. The bird was spotted flying to roost in a tall pine at sunset as young Newton headed home from work.

Making a careful note of the exact limb of the tree the big gobbler perched on, he went home and made plans to get a turkey the next morning. Arising long before dawn, he loaded his single-barrel muzzleloader with a "turkey load" of powder and No. 4 shot. The stars were still twinkling as he silently took his position near the big pine and waited for enough light to spot his target. As the first of morning begun to reveal the outline of the trunk and limbs, the gobbler could be seen stirring high in the top. Newton drew a careful bead on the tom's head, then raised the sight a trifle and squeezed the triger. The turkey began to flop around on his lofty perch, and even though he was sure the bird was mortally wounded, Newton feverishly reloaded to get another shot. In his eagerness to make sure his first turkey didn't get away, he was not too concerned about accuracy in measuring the powder and shot. As a result, his next shot almost

f the Past

Photos by the Author

Mr. Bryan displays a part of his collection of guns which covers over 100 years of firearm history. Are the weapons of today better than those of his early hunting experience? Well, he's not real sure that they shoot any straighter, just a bit faster. Part of the story these guns could tell is related here, sometimes in terms that seem so distant from today's hunters. Step into the past.

knocked him off his feet. The recoil was so hard that the trigger guard tore the nail off his trigger finger. Needless to say, the turkey was dead after this shot.

In the following years, Mr. Bryan developed a great love for all types of hunting available to him. A night of 'possum hunting often followed a full day of plowing. Many times during the night hunts a flock of wild turkeys would be flushed from their roost and scattered. He would be back before dawn with his gun and turkey call to lure a gobbler within range of his weapon. This was followed by a quick return home, a hearty breakfast, and another 12 or 14 hours in the fields.

Turkeys were plentiful in Chatham County when Newton Bryan was a younger man. Flocks of 15 turkeys were not unusual in the area east of Pittsboro where he lives. His knowledge of hunting and skill with a gun made getting a turkey for the table a fairly simple job. He remembers four different occasions when he killed two turkeys with one shot, and once killed 23 squirrels with one box of shells.

His average quail bag was about ten per trip. But all this game was consumed by the family and not killed for the sport of killing. Shotgun shells were 30 cents for a box of 25. Powder and shot cost 30 and ten cents for a pound respectively, with caps at five cents per hundred. This made hunting an economical source of food. The small number of hunters and good supply of game had a harmonious existence until recent years.

Mr. Bryan attributes the present scarcity of turkeys to a combination of circumstances. Chief among these have been the extensive logging operations of recent years, forest fires, loose dogs, and the apparent willingness of the public to kill any turkey they see, at any time or place, regardless of sex or season. Though the current outlook for turkeys in North Carolina is not bright, he thinks the management and restoration work being carried out by the Wildlife Resources Commission, if given the support of the people, can help this magnificent game bird stage a comeback in our state.

Hunting 75 years ago was certainly a more personalized sport. This powder and shot measure was essential to muzzleloading.

The Economic Importance of the Uwharrie Deer Herd

by

Ken Wilson and Ollie Thompson

Photos by Joel Arrington

ASK most any big game hunter in the Charlotte-Greensboro-Winston-Salem area where he would have the best chance of bagging a deer close to home and he would probably say, "The Uwharrie reservation." Of course! And he would be right. Taking into account the normal population fluctuations experienced by all wild animals, the Uwharrie area does support a sizable herd of deer and it provides excellent big game hunting opportunities for more than 100,000 hunters who live within a 60-mile radius of the area.

But the Uwharrie reservation symbolizes more than a place for hunters to hunt. The rugged beauty of its 11,000 acres and the many thousands of acres adjacent to it represent something else of more tangible importance to many local people—money. Money in the bank each year to landowners and business people—grocery stores, gas stations, hardware stores, restaurants and motels. Some years more than 5,000 hunters hunt on the Uwharrie Wildlife Management Area alone and it is estimated that another 10,000 hunter days are spent by sportsmen in quest of deer in the territory surrounding the reservation. And while having all this recreation and fun they spend tens of thousands of dollars. Dollars of considerable importance to the economy of Montgomery County.

Working under a cooperative agreement with the U. S. Forest Service, which owns the vitally important Uwharrie reservation, and helped by landowners and other conservation-minded people in Montgomery County, the deer herd continues to spread into new range. And each year hunters come in greater numbers to hunt them and spend their dollars.

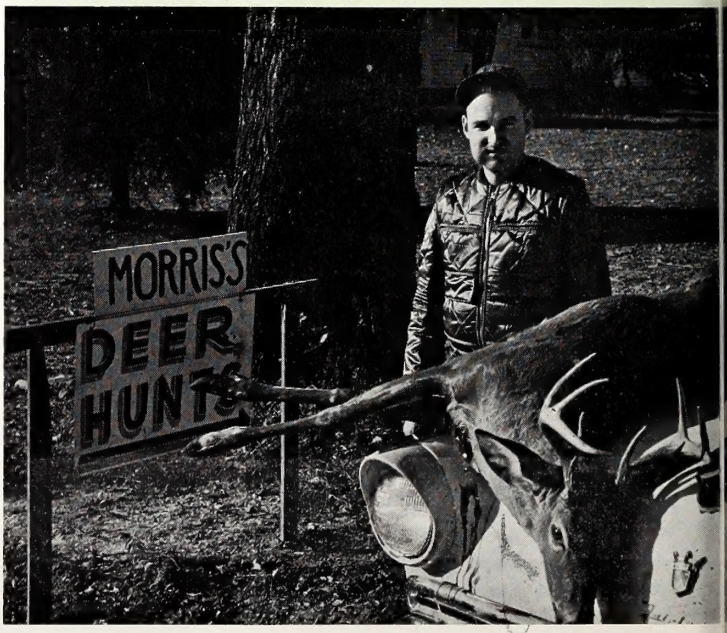
But it was not always this way. Follow along while we tell our story. We think you will find it interesting.

The year is 1944. There are vast expanses of forests in the Uwharrie Mountains—but no deer in them to hunt. Old timers recall that whitetails were plentiful about 1890 but almost none have been seen in the locality for more than 30 years. In fact, deer populations are scarce to absent throughout the entire Piedmont. Good hunting spots in the mountains are uncommon. Many coastal plain counties support deer and it is this part of the state that attracts most of the hunters.

In 1944, three years before the inauguration of the Wildlife Resources Commission, the problems of wildlife management were those of the Department of Conservation and Development. America was engaged in a titanic war with the Nazi Germany and Japan. Tens of thousands of our men were fighting on fronts scattered all over the world. Most of them would one day come home and many of them would want to hunt for deer. Plans to provide this hunting became necessary.

Because the Uwharrie mountain range supported prime habitat close to heavily populated areas, it was selected as the site for a deer restoration project. The focal point of restoration activity was the Uwharrie Wildlife Management Area, in Montgomery and Stanly counties along the Pee Dee River, much of it within the boundary of the U. S. Forest Service Uwharrie National Forest Purchase Area, a total of approximately 35,000 acres. This included the present

What did this deer "cost?" Generally no price-tag is put on sport, but hunting does bolster a community's economy.



11,000-acre Uwharrie area, about 20,000 acres of privately-owned land in Montgomery County and the 4,500-acre Morrow Mountain State Park in Stanly County.

The objectives of the project were to trap deer in areas of abundance, transplant them to the management area, provide them sanctuary and protection, and leave the rest up to Mother Nature.

The Fish and Wildlife Service approved the use of Federal Aid funds for the project. Permission was obtained to trap the deer from the property of Mr. R. J. (Dick) Reynolds near Roaring Gap in Surry County and the Cameron Morrison estate in Mecklenburg County. By March 20, 1945, trapping operations were completed and 123 deer (122 from the Reynolds' estate and one from the Cameron Morrison estate) had been caught and released on the management area. There were 52 bucks and 71 does. One hundred and eleven deer were relocated east of the Pee Dee River and 12 animals were released on the Morrow Mountain State Park. Within the boundaries of the sanctuary, the deer would be safe from unscrupulous meat hunters.

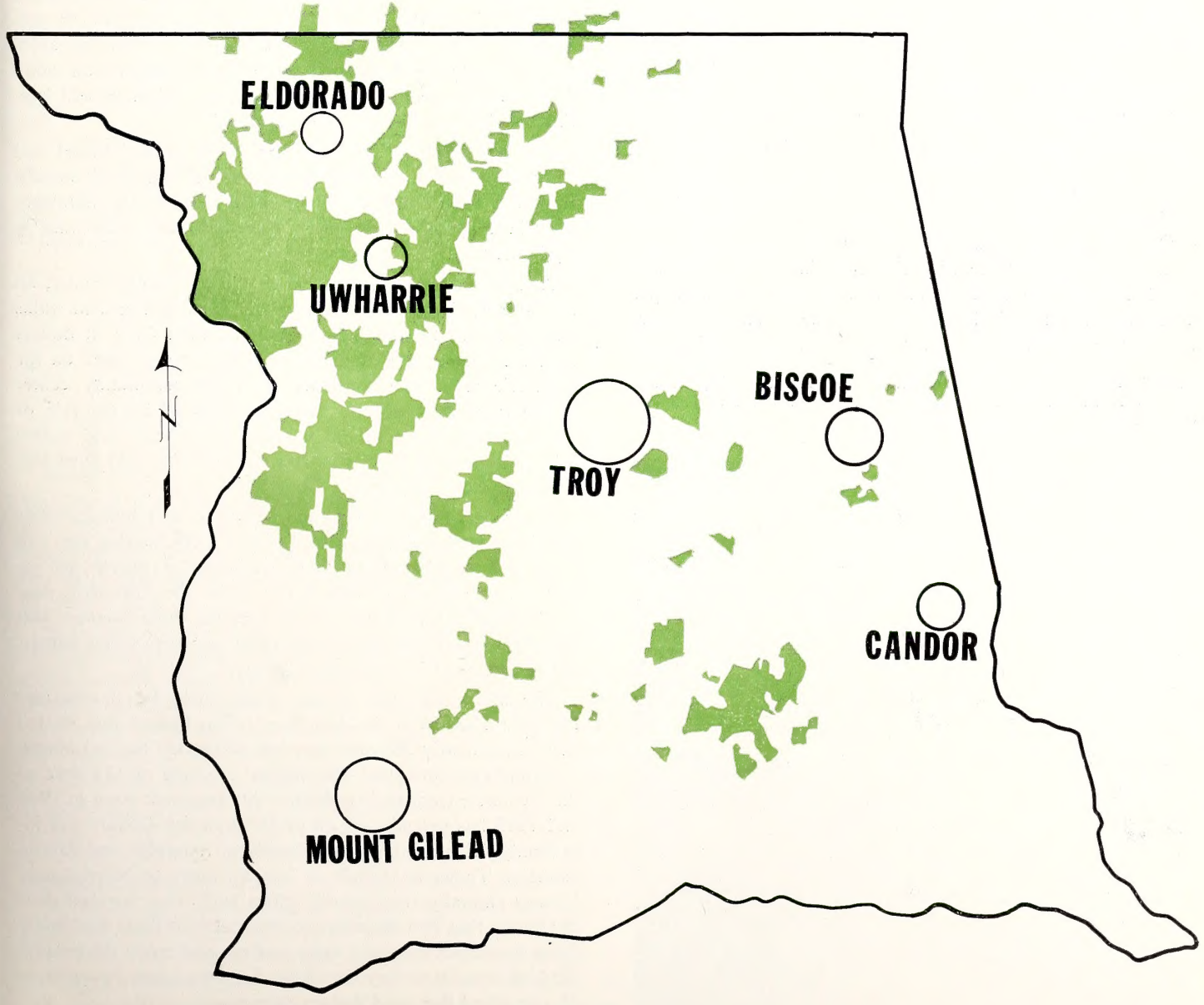
The story of what happened following the release of the deer is an interesting chapter in deer management history. It makes pleasant reading.

Under the diligent and dedicated care of Refuge Manager Ollie Thompson, a member of the crew that trapped the deer in 1944, the herd increased rapidly. By 1949, small parts of Montgomery and Stanly counties were opened to deer hunting. But no hunting was allowed in the Uwharrie reservation until 1954, and Morrow Mountain State Park has of course been kept closed to hunting, as are all state parks.

Since the last deer was transplanted in the management area on March 20, 1945, 19 years have passed. During this time most of the talk has been about the rapid increase of the deer herd, the enjoyment of being able to hunt big game an hour's drive away from cities like Charlotte and Winston-Salem, the importance of dog control in deer management, overpopulated range and the need for either sex deer hunts. All this talk but not one word about the economic value of the Uwharrie deer herd.

Just what is the dollar value of the deer herd? Do the sportsmen spend the money we think they do? Has the presence of deer increased land values? What about crop damage

The areas in color on this map are lands within the boundaries of the Uwharrie National Forest in Montgomery County. All of this land, except 11,000 acres in the Uwharrie Reservation is open to public hunting during the season.



and other negative values? Do business people in the county recognize the economic importance of the Uwharrie deer herd?

Our survey did not answer all these questions. But it did reveal that many business people are aware of the importance of the Uwharrie deer herd to the economy of Montgomery County. While most folks talked in glowing terms about the deer, there were some dissenters who were concerned about crop damage and the difficulty of keeping hunters off their land. But the grocery store owner in Eldorado who spoke unkindly of the deer also grudgingly admitted that he sold more gas and groceries because of them. He also said that "the presence of deer on my land—I own 1,200 acres—has upped the value at least 10 percent."

Mr. O. W. Lisenby, a grocery store owner in the village of Uwharrie, likes the deer. He had this to say; "Purchases by the deer hunters are a big spurt to my business. Grocery sales some days increase 25 percent. Business several years ago was out of this world. This year the deer were off and my sales dropped off." Mr. W. O. Vanhoy, across the road from Lisenby, offered these comments: "Deer hunting time increases my business. In fact, during the first week this year I was so busy I had a hard time getting my full eight hour's sleep. I sell more gas than anything else."

The owner of the Kearns Grocery near Mt. Gilead reported that "Beginning in October, business picks up. One Sunday in November three hunters bought $50 worth of groceries. November sales were $700 more than last month. Deer are spreading south into Richmond County. The money spent by deer hunters in the county is a big help to me. I also lease 300 acres for $150 and that helps." Numerous other owners of small grocery stores, without exception, agreed that the Uwharrie deer herd annually brought them more dollars.

Our studies revealed that thirteen hunting clubs from many parts of the State and numerous individuals annually pay landowners rental fees ranging from $.35 to $1.85 per acre to hunt on their land for deer. The income per tract from these fees range from $50 to more than $700 per year—enough money to pay taxes and put a few dollars in the bank. It's a good arrangement. But two enterprising landowners adjacent to the Uwharrie reservation like their method better. They charge the hunter $3 for each day he hunts. On this basis one operator in 1962 sold hunting rights to 150 sportsmen for a total of $450 while his neighbor obliged 351 hunters who paid $1,053. Last year they didn't do quite so well, But the authors found that on several occasions in recent years **farmers have pocketed more money from the deer crop than the combined total of all farm crops.**

This is highway 109 south of Eldorado most any day during the deer hunting season. These automobiles have brought eager hunters who in turn have to purchase goods and services in this area. Many will pay to hunt on private lands.

Landowners adjacent to the Uwharrie reservation were in complete agreement about the economic value of the deer herd to them. When asked about its importance Mr. H. T. Grissom of Eldorado made these remarks: "The deer herd has a high value. I've lived here for 36 years and in that time nothing else has brought so much money into the community. The night before hunting season opened this year (1963) there were hundreds of cars parked along roads from all parts of the state. They filled up with gas and bought food at the local stores."

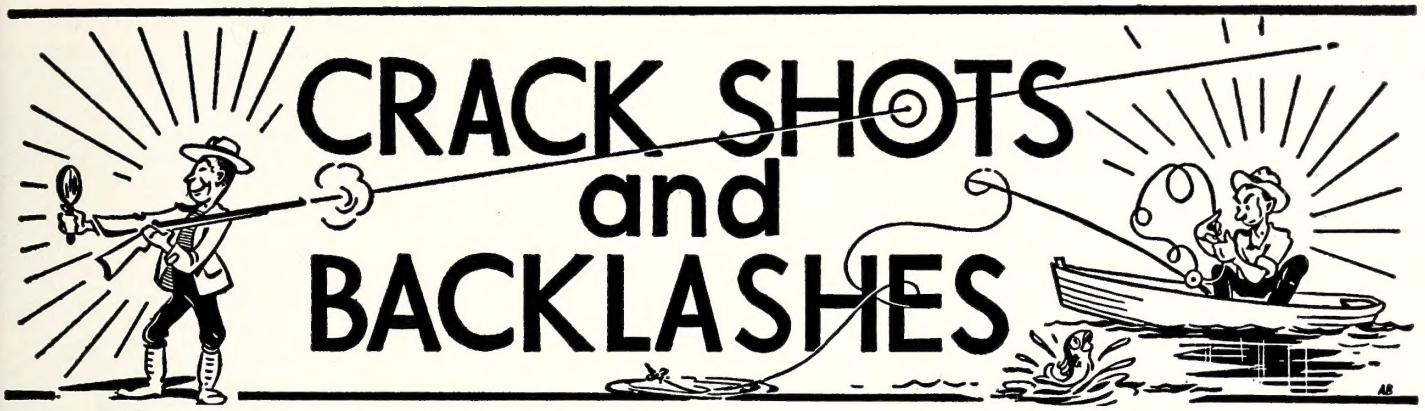
Mr. Fabor Morris, another landowner in Eldorado, was just as outspoken. "The Uwharrie deer herd has helped me and the people in Montgomery County get more dollars. I own land next to the Uwharrie reservation and I have about as many deer. The value of my land has gone up 50 percent. Taxes have gone up, too; I hope the recreation areas the government has planned to put in the reservation won't drive the deer away. If that ever happens, all of us will lose. I'm worried and I'm not the only one."

The Montgomery Dairy Bar in Troy, Blakes' Motel and Restaurant in Candor and restaurants in Denton all benefit from the money brought in by deer hunters. The hardware store in Troy sells guns, shells, flashlights and other hunting equipment.

At Eldorado the construction of the community center, all furnishings, silverware, heating plant, stove and cement walks were paid for by the Home Demonstration Club in dollars earned from the sale of food and drinks to sportsmen on the Uwharrie area. The construction of the community center in the town of Uwharrie was also financed by the sale of home-cooked meals to the hunters. Sandwiches and coffee sold to hunters at E. P. Russell's store in Eldorado have also helped the local Methodist Church.

Many deer hunters who don't belong to deer hunting clubs that lease land and can't afford to pay daily hunting fees can hunt free of charge on large acreages of Forest Service land outside the reservation. This gives the Uwharrie deer herd additional economic value because these hunters also spend money for food, gas and other necessities that benefit the economy of Montgomery County.

The main substance of our story might be summarized like this: The Uwharrie Deer Restoration Project that started as an idea nearly 20 years ago has succeeded beyond almost everyone's expectations. The original stocking of 123 deer on the Uwharrie Cooperative Wildlife Management Area in 1944 and 1945 has spread over all of Montgomery County and into Stanly, Richmond, Anson, Davidson, Randolph and Rowan counties. Today thousands of hunters come to Montgomery County annually from nearby cities and towns to hunt deer in an area that two decades ago contained no deer. And while these sportsmen hike and hunt and eat and enjoy the healthy outdoor recreation they enrich the local economy by upwards of a hundred thousand dollars each year.



DEPARTMENT OF LETTERS TO THE EDITORS, FIELD NOTES, AND ITEMS OF INTEREST

Conducted By Rod Amundson

At its January meeting the Wildlife Resources Commission passed a resolution opposing further state or federal restrictions on the right to bear arms:

Whereas, The State of North Carolina is one of the thirteen original Colonies that wrested independence from the British Crown through individual and collective desire for personal liberty; and

WHEREAS, The Constitution of the United States of America guarantees the right of citizens to bear arms; and

WHEREAS, Historians agree that the traditional right and privilege of American Colonists and their descendents to bear arms have had a real but incalculable effect on the winning of battles and wars antedating the American Revolution and continuing to the present time; and

WHEREAS, Throughout the history of mankind restrictions on the possession or ownership of weapons of any kind have never reduced effectively the incidence of crime; and

WHEREAS, Placing control over ownership or possession of firearms or any other weapons under police authority could logically be construed as a step in the direction of foisting upon the people of the United States, through the clandestine efforts of subversive forces, a system of government wherein police authority supplants democracy; and

WHEREAS, Hundreds of thousands of North Carolina sportsmen and other citizens who now own firearms or weapons of other kinds are gravely concerned over the possibility of further legislative action designed to further control the ownership or possession of such arms; and

WHEREAS, Legislation now being considered in the Congress of the United States and the legislative bodies of many of the several states has been inspired by a recent national and historical tragedy; and

WHEREAS, The statutes of the United States, the several states and their subsidiary governing bodies already provide for necessary and adequate control over the ownership, possession or use of weapons of any kind; and

WHEREAS, The ownership, possession or use of firearms or other weapons is of vital necessity in the defense of a citizen's home:

NOW THEREFORE, BE IT RESOLVED, That the North Carolina Wildlife Resources Commission in official session in Raleigh, North Carolina, this 30th day of January, 1964, opposes any further restriction on the ownership or possession of firearms by police authority, whether or not such authority be vested by legislative act; and

BE IT FURTHER RESOLVED, That the Commission requests the Honorable Members of the Congress of the United States and the General Assembly of North Carolina to give sincere and soul-searching thought to any legislation that might tend to infringe upon or curtail a great and traditional American freedom; and

BE IT FURTHER RESOLVED, That copies of this resolution be transmitted to Members of Congress of the United States and the General Assembly of North Carolina.

It may be that there is a need to control the sale of handguns by mail order, however, and nothing in the above resolution takes issue with this type of legislation.

Copies of this resolution were sent to members of the General Assembly and to the N. C. Congressional delegation, and reaction has been generally favorable.

Buggy Birds

DEAR SIRS: Have been a subscriber to your magazine for four years; but never thought to write until now. I notice you have a section of letters to the Editors where you answer various questions sent in by readers. Hope you can answer a couple for me.

Almost every duck shot by me this year has an odd sort of black bug, which I discover while picking. This bug does not seem to be able to fly. Have any other readers observed same?

Would also like to ask about a white fly found on hawks. Have never seen one of these, but have heard lots of older people mention same. Do any of above have a name? LOUIS WILLIAMS, ROCKINGHAM.

The bug found on ducks is a louse, probably *Mallophaga*, that is parasitic specifically to birds and does not bite humans. The white fly on hawks is a flightless form of Diptera (which is another word for fly) that is probably parasitic. Without specimens in hand it is impossible to make a positive identification.—Ed.

Bouquet

DEAR SIRS: Congratulations on

your "Wildlife in North Carolina" publication, which I have enjoyed for the past year after receiving a Christmas gift subscription from my friend W. F. Fletcher at Kitty Hawk, a former editor of the Post, and now a dedicated "Tarheel" sportsman.

The cover of the January issue, with the beautifully portrayed baldpate pair, and the illustrations of the spotted and common weakfish on the back, finally prompted this long delayed note of appreciation for your efforts.

Artist Duane Raver's "widgeon" are magnificently done, and the picture brings a host of pleasant memories flooding back—of baldpate shooting here in the Delaware and Maryland marshes.

But the illustrations of the sea trout top anything I have seen in the fish department. No artist myself, I do appreciate the beauty of a real fish when I see one, and never have I seen a gray or spotted trout portrayed so realistically and beautifully. And this includes the National Geographic's Hashime Muryama, who painted a gray trout for the Geographic's Book of Fishes. The under-rated weakfish is, in my opinion, the most beautiful thing that swims, and your "Wildlife in North Carolina" has provided the perfect portrayal.

Again, congratulations on your magazine, with all best wishes for the future. Wm. H. WAGGAMAN, JR., EDITOR, THE NEWARK (N.J.) POST.

Dragonfly

DEAR SIRS: We very much enjoy your publication, particularly the features on natural history and your back cover feature that appears in each issue. The Eastern Chipmunk story and also the November Wild Turkey visual story were outstanding.

But—could you, would you, identify the beautiful dragonfly who graced the first page of the September issue? A handsome photograph by F. Eugene Hester. I would like so much to have his scientific name, genus, and species of the family Odonata. I know you do not publish a scientific magazine, but when possible it would be nice to know the identity of the creatures featured.

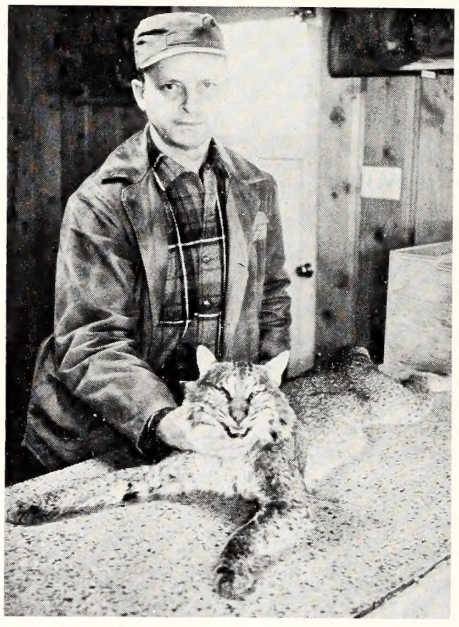
I am enclosing a check for a few Christmas subscriptions. Thank you for the convenient order form. CLAIRE C. FONTAINE, ST. PETERSBURG, FLORIDA

The insect in question was a local product, *Tramea carolina*. From now on we will try to give generic and specific names to species that are not ordinarily grouped under a general common appellation.—Ed.

Surprise Package

DEAR SIRS:

Enclosed is picture of a bobcat I killed while hunting with my brother U. F. Coulbourn of Windsor, N. C. on December 28th, 1963. We were hunting on the



Roanoke River low ground Plantation near Lewiston, N. C. which is owned by Mr. Bogerty Urquhart. We were quail hunting and our setter pointed the bobcat in a pile of brush. We were set for a good open shot at the expected covey when the cat streaked out like he was jet-propelled. One shot of No. 8 quail load at about 30 feet rolled him over. The setter was on top of him before he died and we were afraid he would rip the dog open but fortunately he was so hard hit he died before he could do the dog any serious damage. The cat weighed 23½ lbs. and measured 31" from nose to base of tail. It is now being mounted by the taxidermist. G. I. COULBOURN, SUFFOLK, VA.

More from the Jug

DEAR SIRS: On the back cover of the February edition of Wildlife Magazine, the use of plastic jugs for birdhouses is shown. I haven't tried this myself, however, I do have my own use for plastic jugs.

I use them to set lines for catfish, instead of glass jugs which are liable to be broken when setting them. Also these white jugs are easy to spot on a lake and have much more buoyancy than a glass jug.

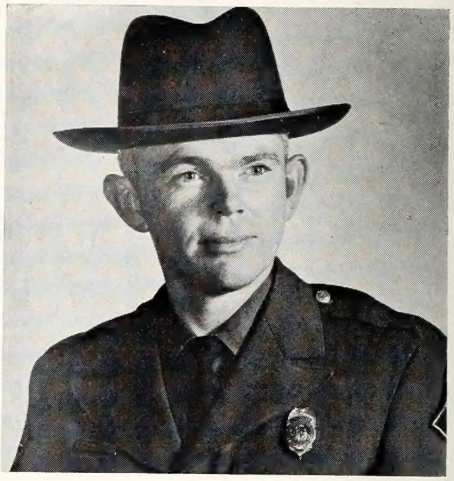
I don't anchor my sets, I attach about three to four feet of line with a hook and NO weight. Of course you need a rowboat to collect the sets because a big catfish or a nice size snapper will drag the jug all over the lake.

Enclosed is a photo of my father, Mitchell, with a fair size cat which I caught in a small lake near Greensboro.

If you've never set jugs before, you should try it sometime. There's not much effort and you can gain some mighty fine eatin'. RAMON BELL, GREENSBORO

State law and regulation prohibits the use of glass or metal fishing floats because of the hazard to boats or water skiers, and these plastic jugs fit the requirement of safety. The top section of

KNOW YOUR PROTECTOR



John R. Kennedy

Now living in Chocowinity, Wildlife Patrolman John Kennedy was formerly the Wildlife Protector in Pender County where he was a member of the Burgaw Methodist Church and the Junior Chamber of Commerce.

Kennedy was born in Durham County and was graduated from Hillsboro High School and attended N. C. State College. After serving a two-year tour of duty in the U. S. Marine Corps, he completed a business administration course and was employed by the Dept. of Motor Vehicles. He attended the Pre-Service Training School for Wildlife Protectors in 1957 at the Institute of Government.

Kennedy is presently a member of the National Rifle Association and the Southeastern Association of Game and Fish Commission who awarded him a citation as "N. C. Wildlife Protector of the Year" in 1961. He is married to the former Shirley Walker of Hillsboro and they have three daughters.

these plastic jugs makes a mighty handy funnel.—Ed.

Aw, Rats!

DEAR SIRS: Being great outdoorsmen, my friend and I are avid hunters, trappers, and fishermen. We both love the outdoors, and have been trapping and hunting together for three years. We trap mostly for muskrats on our creeks. The first season we trapped, we caught not one muskrat. Last year, my friend caught one kit muskrat. I guess experience pays, though. This year we set our traps during the Christmas Holidays, and we're really going strong. Mike, (that's my friend), has caught two and I four.

Now, as the season draws to a close, we are thinking of them as pets. Would it be possible to tame some of the babies? If so could you tell us what would be the correct formula to feed them? We know where some dens are (we haven't trapped at any of them), on our land, and if permissible we would like to dig out a nest and get a pair of babies. We wouldn't take any more. Would you please let us do this, and give us the best advice as to the steps to follow. We would give them the best of care and housing.

My father says they would probably be vicious, but I've seen some mighty tame flying squirrels and chipmunks, which have been hand raised, whereas the wild adult ones are mean.

Would you please give us utmost consideration and reply to our letter. I am preparing to be a vet. Thank you so much, two sixteen year old, woods-lovin' boys. ERIC HURLEY, HIGH POINT

You would need a scientific permit to take either muskrats or flying squirrels from the nest after the hunting and trapping season closes.

Muskrats do not ordinarily survive in captivity, and as far as we know, no one has ever tamed one. I have scars on my fingers to attest to their vicious nature. Muskrats are valuable fur bearers, but no one has ever been able to raise them in the manner that mink are raised.—Ed.

Help Wanted

DEAR SIRS: In the rush and confusion connected with transferring my headquarters last summer, I allowed my subscription to your excellent and informative magazine to lapse. When I finally managed to get on your mailing list again, I requested that my subscription be back-dated in order to fill in the blanks in my file. However, I have not received any word regarding this, and I note that the subscription is marked to cover the years of 1964 and 1965.

Is it possible to secure back issues? If so, what is the cost? I would very much like to complete my 1963 volume.

The issues I need are May through November, 1963. I will appreciate it a great deal if you can send me these, and let me know how much I owe you. R. FRANKLIN GUGAN, BOX 10026, RICHMOND, VA. 23240

Sorry, we can't supply back issues. Perhaps some of our readers can help out.—Ed.

Rod Amundson

A mood of peace and quiet created in black and white. Perhaps the end of the line for sailing vessels pictured in the background, or maybe they're simply resting for tomorrow. The Pungo River near Leechville.

Underground Operation

DEAR SIRS: I noticed in your magazine last month that people do not know what to do with wild turkey that have eaten wild onions.

Years ago my mother would wrap the turkey in a cloth bag and put it about a foot in the dirt, leave it over night and all objectionable odors are gone. You can do the same to fish ducks. RICE GWYN, JR., LONGWOOD

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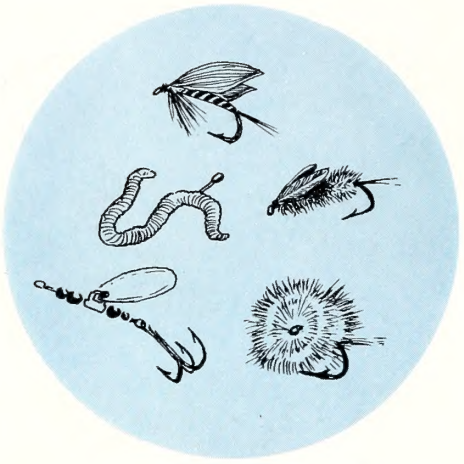
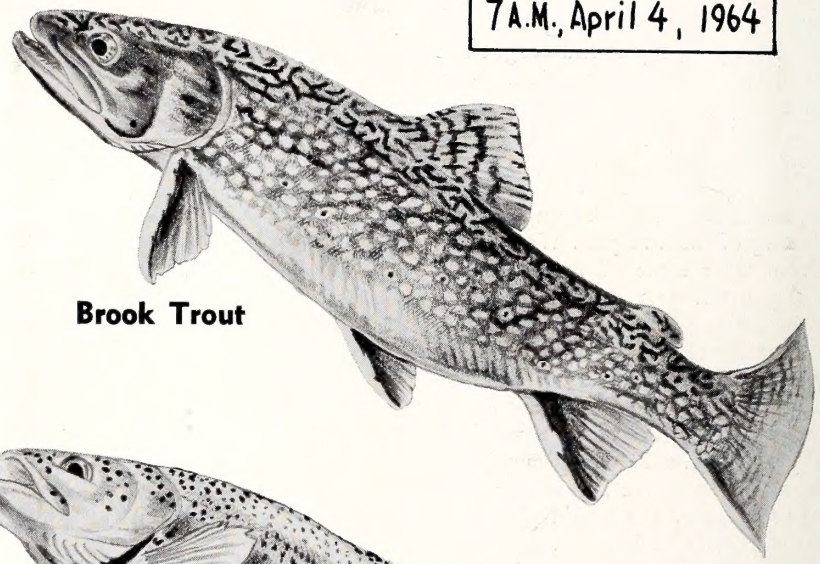
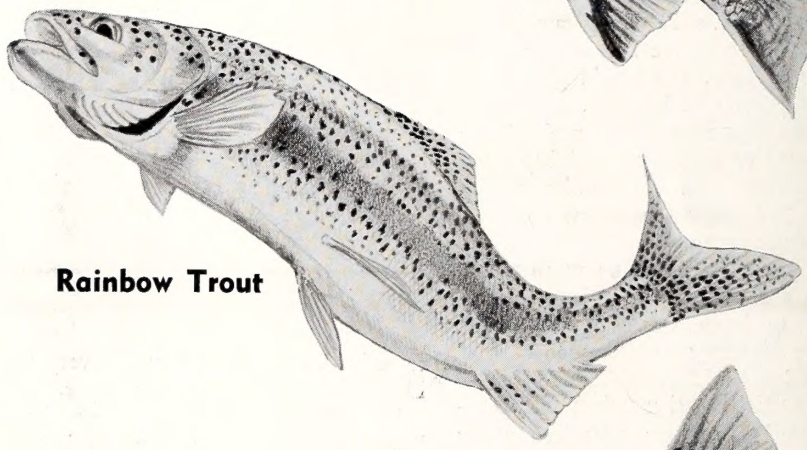
North Carolina
Trout Season Opens
7 A.M., April 4, 1964

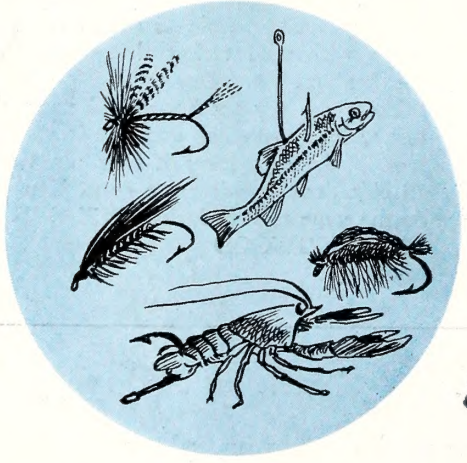


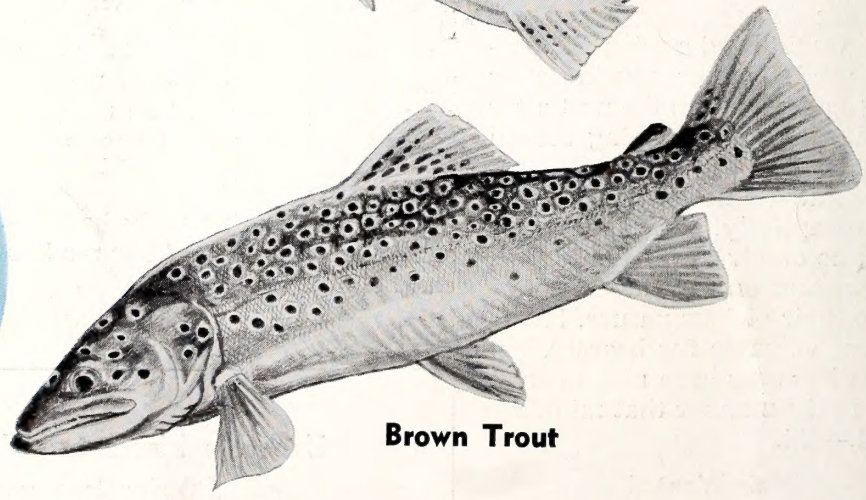


Brook Trout



Rainbow Trout





Brown Trout

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Wildlife in north carolina

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may 1964

Luther Partin

School's Out!

The lazy days of late spring seem to be made for a boy and his dog. Most of the time you won't find either of them this quiet. What's next, now that school is out? Fishing? An early swim? A hike? A love of nature, a respect for our natural resources . . . these help make men out of boys.

Wildlife in north carolina

The official publication of the NORTH CAROLINA WILDLIFE RESOURCES COMMISSION, Raleigh. A monthly magazine devoted to the protection and restoration of our wildlife resources and to the improvement of hunting and fishing in North Carolina.

State of North Carolina

TERRY SANFORD
Governor

North Carolina Wildlife Resources Commission

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COVER

The chances are that you won't see any young cottontails this spring because of their natural shyness and well-hidden nests. So we're presenting this portrait of an inquisitive pair among some crossvine blossoms. Young wildlife should be left alone since they will surely die if we attempt to raise them in captivity. Free-running dogs and cats take a toll of helpless young wildlife, too. Transparency by Jack Dermid.

WILDLIFE IN NORTH CAROLINA recognizes the need for close cooperation between State and Federal conservation agencies and the people who hunt and fish—to bring about a restoration of our renewable resources. The Editor gratefully receives for publication news items, articles, and photographs dealing with the North Carolina out-of-doors, but reserves the right to reject materials submitted. Full credit is given for all materials published.

* * *

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TALL TALES

by Jack Bayless
Wildlife Biologist

Photos by
Dick Clapp

I'M sure that everyone who reads this magazine is familiar with the stories told by the old hunter or fisherman about the good old days when the ducks blackened the sky, the fields abounded with game, and the waters were full of fish. These "Tall Tales" usually come forth at the fireside after a hard day in the field and a hearty supper. Respect for age and wishful thinking hold us spellbound, but secretly, we all take these stories with a grain of salt. It isn't that we doubt the word of the old man, but figure that the stories grow a little with each telling—and they have been told many times.

Recently, I ran across some information on the history of striped bass which made me wonder if our grain of salt attitude isn't selling the old stories a little bit short. There's probably more truth in the old man than we realized. This information about striped bass comes from some very old records contained in the Fish and Wildlife Service's reports or published in scientific journals. These records are so impressive that they read like "tall tales."

To preserve the authenticity of these records, direct quotes from the publications will be presented.

Striped Bass History

The striped bass ranks close to the codfish in the vital part which our fishery resource played in early American history. The earliest mention of striped bass appears in the writings of Captain John Smith:

> "The Basse is an excellent fish, both fresh & salte . . . They are so large, the head of one will give a good eater a dinner, & for daintinesse of diet they excell the Marybones of Beefe. There are such multitudes that I have seen stopped in the river close adjoining to my house with a sande at one tide as many as will loade a ship of 100 tonnes."

The abundance of striped bass may very well have saved the lives of our early colonists who came over on the Mayflower, as evidenced by these comments:

> "In the year 1623 the Plymouth colonists had but one boat left, and that none of the best, which then was the principal support of their lives, for that year it helped them for to improve a net wherewith they took a multitude of bass, which was their livelihood all that summer."

We get some idea of the tremendous number of these fish from an article which appeared in 1635:

> "The Basse is one of the best fishes in the country —the way to catch them is with hooke & line; the Fisherman taking a great cod-line, to which he fasteneth a peece of Lobster, and throws it into the sea, the fish biting at it he pulls her to him, and knocks her on the head with a sticke . . . the English at the top of an high water doe crosse the creekes with long seanes

This is a main focal point for striped bass anglers from late April until the "run" is over sometime in early June. This is the Roanoke River at Weldon. A few feet from this landing is the first striped bass hatchery in the world which still produces millions of tiny rockfish fry each season. This area, famous for its striped bass, is the source of some tall tales.

or Basse netts, which stop in the fish; and the water ebbing from them they are left on dry ground, sometime two or three thousand at a set. . ."

The striped bass and the codfish were probably the first natural resources in colonial America that were subject to conservation measures enacted by statute. The following act, passed by the General Court of Massachusetts Bay Colony in 1639, ordered that neither cod nor bass should be used as fertilizer:

"At the Generall Courte, holden at Boston, the 22nd of the 3rd M., called May, 1639—'And it is forbidden to all men, after the 20th of the next month, to imploy any codd or basse fish for manuring the ground, upon paine that every person, being a fisherman, that shall sell or imploy any such fish for that end, shall loose the said privilege of exemption from public charges, & that both fishermen, or others who shall use any of the said fish for that purpose, shall forfeit for every hundred of such fish so imployed for manuring the ground twenty shillings'—"

Despite this law, improved fishing methods and the increasing demand by more and more colonists continued to cut down the striped bass population. The habits of these fish make them easy prey as they migrate to their spawning grounds. Even before the United States became a nation, there was such a decrease in the population that laws prohibiting their sale during the winter months were passed in New York and Massachusetts.

Although this decrease was apparent to the people who lived during this period, by our thinking, striped bass were still so abundant that it almost defies imagination. This is evident in the records of tremendous catches during the 19th century, an example which follows:

"Four men in one night, (Jan. 5th, 1811), caught near the bridge at the head of the Niantic River with a small seine, 9,900 pounds of bass. They were sent to New York in a smack, and sold for upwards of $300."

Even as late as the early nineteen hundreds, the waters still teemed with striped bass. Several quotations attest to this:

"As for quantities, almost any time through late summer and into late October, provided one knew the ropes, one could, almost literally, fill a wagon, although I, myself continued beyond local give-away—that is, until necessity more or less compelled me to become a rod-and-reel market fisherman, and I fished like one: on one occasion to the tune of just under a ton of fish in a single period of seven days."

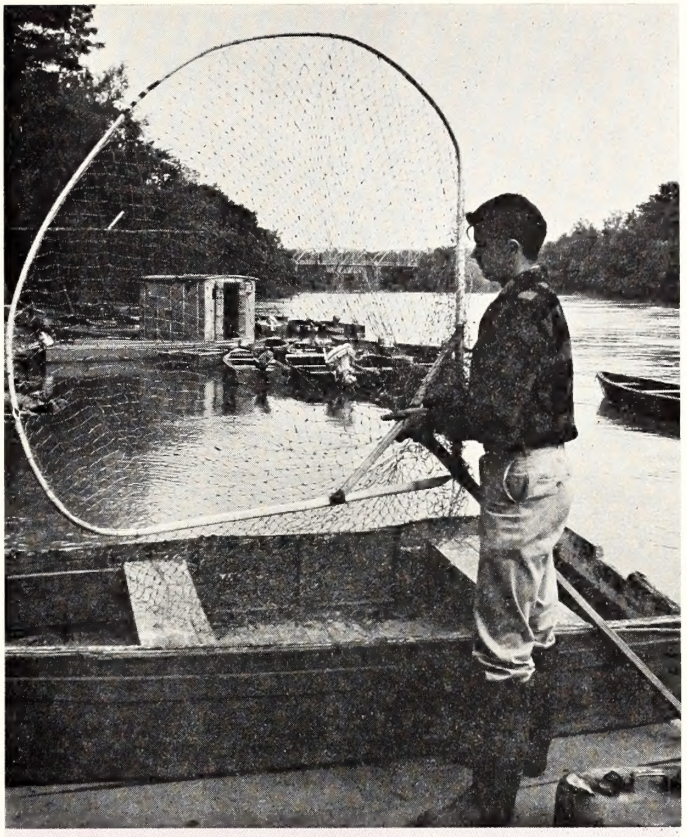
"It is of interest to mention that 90,000 pounds of striped bass were taken in a single trap in two weeks in October, 1936, at Point Judith, R. I."

Throughout the literature there is frequent mention of the upper Roanoke River near Weldon, North Carolina, where the great concentration of striped bass on this spawning ground attracted early workers who attempted to artificially hatch the eggs. Records from these hatcheries give us some idea of the size of the female fish which then ran the river. One of these records reads as follows:

"The weights of 19 female striped bass, taken and stripped for eggs at Weldon, North Carolina, were recorded by Worth (1904). Three females ranged between 3 and 7 pounds, seven from ten to 18 pounds, four from 23 to 35 pounds, and five from 40 to 70 pounds. The approximate lengths of these ripe fish would have ranged from 20 inches (50.8 cm) to over 4 feet, according to a length-weight correlation given by Scofield (1932)."

Early observations record almost unbelievable numbers of fish in this area. One of the earliest observations stated:

"A more definite spawning habitat was suggested by Schoepf (1788), who, describing the vast number of fishes that came up to the falls of the upper Roanoke River, N. C., every spring, stated that the rockfish (striped bass) especially came up the river in millions to spawn and that being checked at the falls 'sprang' and 'tumbled' so that the river foamed with fish."



The bow net is a favorite device for taking the striped bass in the Roanoke River. When the fish are concentrated, several stripers may be scooped up in one lifting of the bow net.

Mr. S. G. Worth, when asked how the blood which colors the water during spawning is produced, replied:

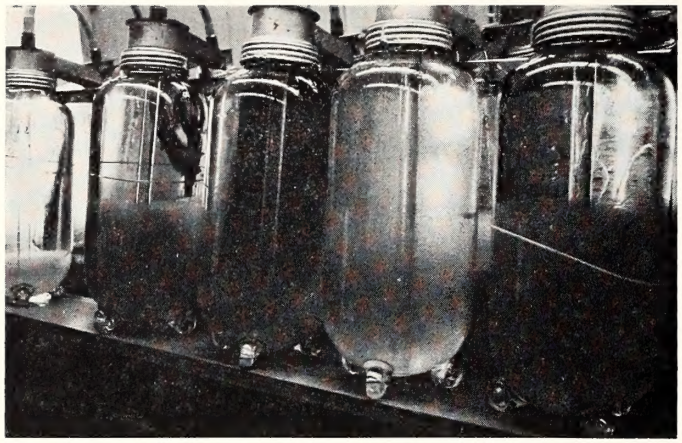
"It is assumed by all the fishemen that operate on the river that it is caused by the gashes made by the fishes finning one another in their attempt to get nearer to the spawning female fish. It causes a bloody stain in the water which I did not myself witness, but I know it has taken place, from the great number of persons who told me about it, and that the water was actually discolored with their red blood."

By 1937 much of the damage had been done. In that year, the extent of the loss of spawning grounds was summarized by Merriman as follows:

"There can be little doubt that striped bass in early times entered and spawned in every river of any size, where the proper conditions existed, along the greater part of the Atlantic coast, and that as cities were built and dams and pollution spoiled one area after another, the number of rivers that were suitable for spawning became fewer and fewer. At the present time there is every indication that by far the greater part of the production of striped bass along the Atlantic coast takes place from New Jersey to North Carolina, and that the addition to the stock from areas to the north is so small as to be almost insignificant and of little consequence."

Spawning Grounds Are Weak Link

Suitable spawning areas are the weak link in the life of striped bass. They have very definite requirements because of their method of spawning. To realize the importance of suitable spawning grounds, one should know something of their spawning activities and conditions which are necessary for survival of the eggs.

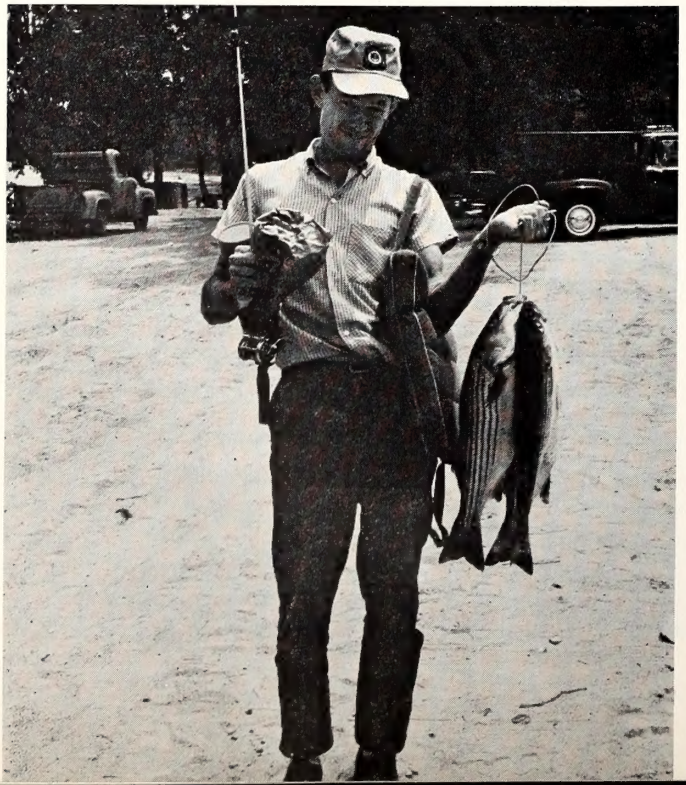


Hundreds of thousands of striped bass eggs are agitated by a constant flow of fresh water. These jars are over 30 years old.

The striped bass is a free spawner. That is, the eggs are released as the fish swim about in the river. No nest is built and there is no parental care of the eggs or young. As the female fish becomes ready to spawn (ripe), she is surrounded by from two to fifty males. As the roe releases her eggs, the males release sperm and fertilization takes place in open water. There is a great flurry of activity during this spawning ritual, and once in a while, the spawning fish boil to the surface and create a great splashing for a few seconds. This thrashing around on the surface is known as a "rockfish fight."

Once the eggs are released, they must be kept in suspension by water currents. If they sink to the bottom, they will likely die. Therefore, the successful spawning area must have enough running water downstream to keep the semi-bouyant eggs suspended for at least thirty hours. This need for a long stretch of running water is the reason many of our lakes and ponds will not support striped bass reproduction. Also, if a dam cuts off a spawning area or pollution spoils it, the fish can't just go further downstream and spawn successfully. In Chesapeake Bay, spawning takes place in the headwaters of the bay where tidal currents are strong enough to keep the eggs off the bottom.

What's the future of the striped bass? Will catches like this be made 50 years from now? Vigilance may be a necessary price.



Where We Stand Today

It is evident that there has been a steady overall decline in the striped bass population since the white man came to this country. Pollution, dams, and over-fishing have steadily reduced the striped bass population to a fraction of its original status. Small spawning runs occur in the Neuse River and the Tar River due, at least in part, to past stockings of these streams with some 20,000,000 young striped bass from Weldon Hatchery. A fair run of striped bass still goes up the Roanoke River to spawn, but the 70-pound roe fish are no longer taken. Today, a 25-pound roe fish is considered unusually large and few are taken. These large females are extremely valuable, for the larger the fish, the more eggs she normally produces.

Striped bass eggs were artificially hatched at Weldon for the first time in 1874. A hatchery is still operated here by the North Carolina Wildlife Resources Commission's Division of Inland Fisheries. Some of the fry which are hatched here are transferred to other areas of the State to establish new populations. Many of the small fish are returned to the river to help maintain the parent population. Due to the pollution-caused fish kill last year, the entire output of the Weldon Hatchery was returned to the Roanoke River. These fish were released in the Palmyra-Hamilton area, because the eggs which are spawned in the Weldon area normally hatch that far downriver where their chance of survival is much better than it would be in the turbulent waters near Weldon.

Contrary to popular belief, the striped bass do not necessarily return to the spot at which they were hatched as do the salmon. For example, the striped bass fry released at Hamilton will not stop at Hamilton, as adults, when they return to spawn. They will continue upstream to the ancestral spawning grounds near Weldon.

Given clean water, access to spawning grounds, and only a reasonable commercial harvest, the striped bass can return to their former abundance. This fact was clearly demonstrated in California. In 1879, four hundred and thirty five yearling striped bass were planted in San Francisco Bay, where they prospered beyond all expectation. By 1899, the commercial catch alone was 1,234,000 pounds. In all, 17,000,000 pounds were taken commercially prior to 1931, when commercial fishing for striped bass became unlawful and the species was reserved for sport fishermen.

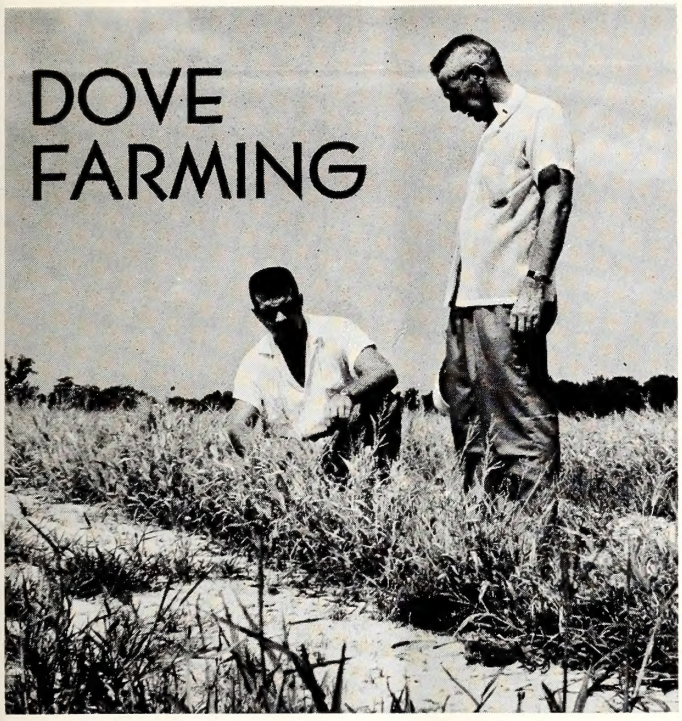
If we fail to curb further depletion of the population caused by pollution, dams, and over-fishing, this magnificent fish will surely go the way of the sturgeon, which, in years past, also ran our coastal rivers by the millions. Today the sturgeon is so rare that only a few fishermen recognize one, even if they are lucky enough to catch it.

Future?

Where do we go from here? The Wildlife Resources Commission and other state agencies will keep the sportsmen informed about new developments which threaten the striped bass fishery. They will also recommend new laws to curb future threats which arise, and study means of managing the fishery. But these agencies work for the people and the ultimate decision rests with the people.

Forty years from now, will we be telling "tall tales" about the rockfish fights in the Roanoke River; or will we be ashamed to mention the puny runs of our day? **It's up to you!**

DOVE FARMING



A field of browntop millet is examined by biologists of the Wildlife Commission. The space between the rows is fairly "clean."

by Nat B. White
Soil Conservation Service
Warrenton, N. C.

THE doves were flying at treetop level that afternoon last fall; just right for the best shooting. I decided to pick my shots and try to get my limit with one box of shells—something I had never been able to do before. Each time two doves came over I concentrated on one bird and took a shot at just the right range. After several flights of doves had passed, my added effort started to show results.

Five of us were gathered around a small field that had been seeded to browntop millet last June after the cucumbers had been harvested. The farmer is a district cooperator of the local Soil Conservation District and he had planted this browntop millet according to his farm conservation plan as a combination hay and cover crop. Another benefit: the doves we were enjoying. The farmer doesn't hunt doves, but had generously let us hunt his field this particular afternoon.

This was the third year that we had shot doves over browntop millet on this farm. The fields we shoot vary in size from one acre to three acres, depending on how many acres of cucumbers are grown any particular year. However, without regard to size of the field the shooting has always been good.

Most dove hunters think of their sport as a big operation needing many hunters to keep the doves moving. These small hunts have a personal angle lacking in the big hunts. It's nice to know all the fellows on the hunt and to be able to call across the field and kid each other. Sometimes on the big hunts unsportmanlike conduct or trigger happy hunters take a lot of the pleasure out of the hunt.

Browntop millet is one crop that will offer dual profits—first as a hay crop, and secondly as a dove hunting area. Hunters are willing to pay for good shooting and the browntop millet will provide that, because the seed is a choice food of this hard-to-hit game bird. Incidentally it is also a choice food of quail, turkeys and ducks. Before the ducks can use the seed, however, it must be covered with several inches of water. Two good shoots a week will, in a short time, more than pay for the cost of planting the browntop millet. The rest will be profit.

Browntop millet will make an excellent summer hay crop, producing about two to three tons of hay per acre, with good management. The seed is planted in late spring or early summer on a firm seed bed at the rate of twenty pounds per acre and drug in. If it is drilled, less seed is used and it should be placed ½-to 1-inch deep in the soil.

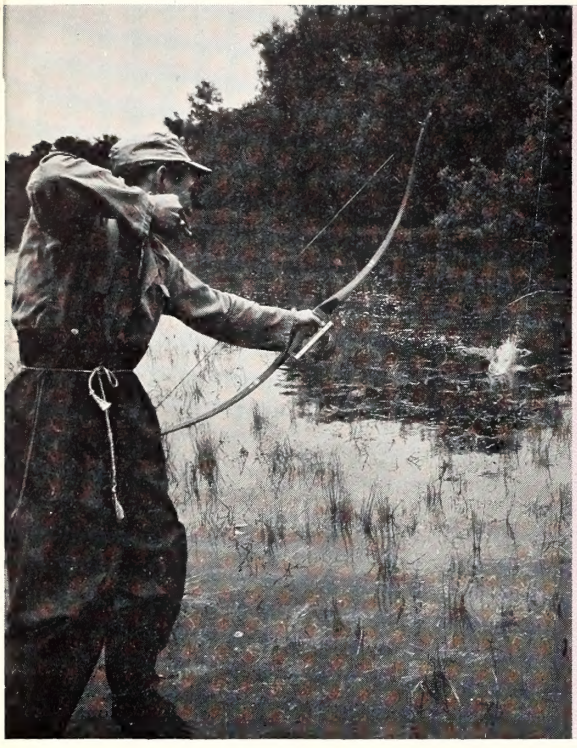
The size of the field isn't too important, since we have had some good shoots in fields as small as one acre; but the number of fields **does** seem important. The more fields on the farm, the more doves there will be. When there is more than one field on a farm it is especially advantageous, since doves have been known to quit a field entirely for no good reason, and go to another.

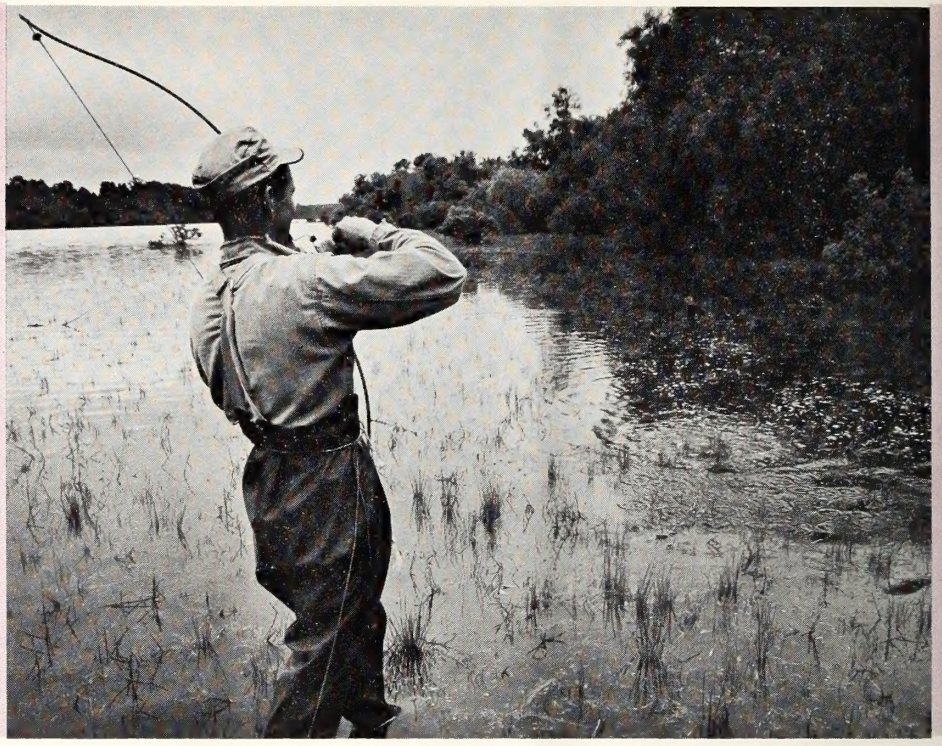
As the afternoon progressed the shooting got better. Three of the fellows left the field to get more shells to complete their limit. My cautious shooting had paid off, and I got my limit with less than a box of shells, and had loaned the rest to my less fortunate companions.

Some late comers were still shooting when our group left the field. Several days later, I found that most of them had gotten their limit too. This just proves to me the attractiveness of browntop millet to the mourning dove.

Dove shooting can be looked upon as a profitable second crop from the use of browntop millet. Many sportsmen are willing to pay for the right to good shooting.

This is the result of "dove farming": a place to shoot where the birds are fairly well concentrated and hunters are spread out.





(left) **A dead center hit on a carp. This tricky target has plenty of fight left in him as Don Baker reels him in. Even in shallow water, a clean hit isn't easy.**

Photo Feature by Joel Arrington

BIG SPLASH

LONG about the last of May or early June when the water in High Rock Lake rises from the spring rains and warms up to around 75 degrees, fishermen become archers and archers become fishermen—and they enjoy both sports at the same time. Bow-fishing seems to be getting more popular and once you try it you can understand why. For fast action and sure success, this sport comes highly recommended.

All non-game fish can be legally taken by the bow-fishermen, but the gar and carp have habits which are especially conducive to bow-fishing. The gar "suns" itself near the surface and sometimes breaks the water, thereby exposing himself for a shot by the archer. Gar are abundant in the sluggish streams of eastern North Carolina and in tailrace areas below power reservoirs in the Piedmont. All that is necessary is a state-wide rough-fish permit which sells for $1.10.

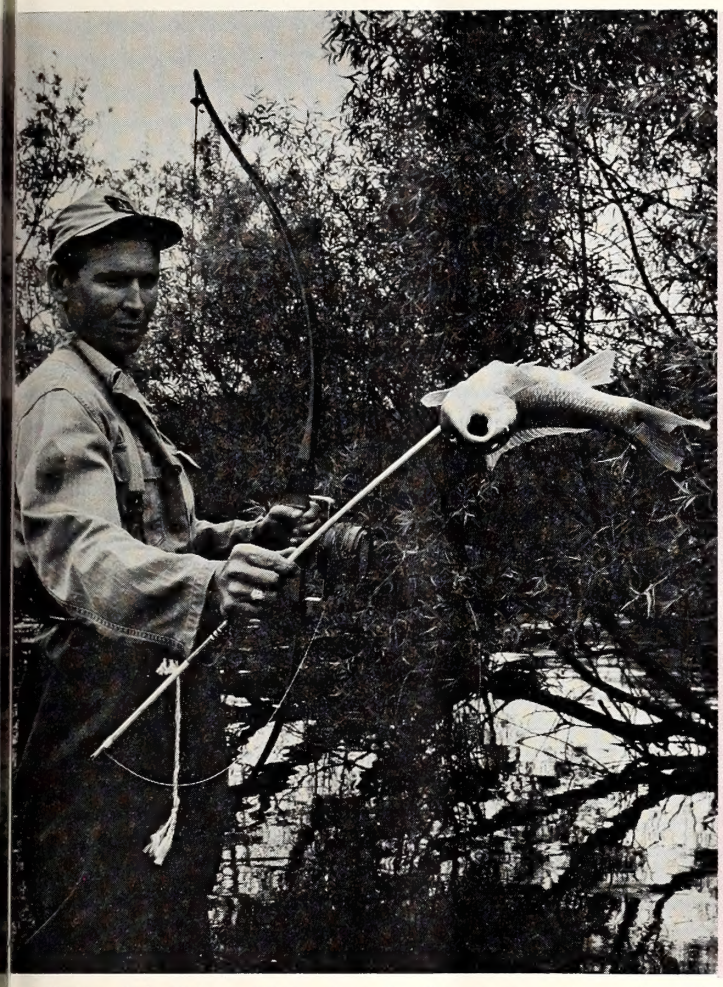
Although gar are sometimes taken with bows, the carp is the most popular target. During the peak of spring spawning, it is not at all unusual for a bow-fishermen to take a hundred pounds of carp in one fishing trip. If you have never seen carp when they're spawning, you have something to look forward to. The commotion stirred up by thousands of them splashing in a spawning frenzy is not soon to be forgotten. At that time, carp are easy to approach, and if you can hit a six-inch circle at ten feet, you should be able to take carp consistently. A bow with at least 35 pounds pull is recommended.

High Rock has a large population of carp. Because of its habit of continually rooting in the bottom with its sucker-like mouth, the carp muddies the water, which has an adverse effect upon plant life and bottom food. The reputation he gains from this method of feeding probably qualifies him for a high spot among the top ten most unwanted fish in North America. But the fact is, the carp is so prolific that there is little chance of the species being eradicated from North Carolina waters—to the immeasurable delight of bow-fishermen.

Although bow-fishing rigs which can be attached to the bow are available from several suppliers, it is no problem to build one from materials on hand. Don Baker, fishery biologist previously stationed at Lexington, used one made from a tobacco can for several years; the rig he uses now is also home-made but he has graduated from the tobacco can to a reel turned on a lathe. See the accompanying photo for details of its construction.

Most participants in this sport like to use a line of about 70 to 80 pounds test because of the pressure exerted as the arrow pulls it off the reel. The best arrows are of solid fiberglass and are fitted with a detachable barbed point of hardened steel. Baker devised a leader-like rig which is attached to the line with a clip and swivel. This makes it possible for him to remove the arrow from the fish without unscrewing the point. He just detaches the clip and pulls the arrow, leader, and all right through the fish.

Although action is fastest during the spawning time, carp can be taken throughout the summer as they "nose" on the surface in the early morning and late afternoon hours. Because the fish are much more wary then, they are harder to approach and a boat may be necessary. Generally, longer shots must be made, requiring considerable accuracy with the bow. But all it takes is practice and patience, and fishermen and archers are long on both. More photos follow.



Unless the fish is fairly close to the surface, the water will often deflect the arrow or destroy its penetrating power. This carp shows what a well-placed arrow can do. It LOOKS easy.

This is one type of reel mounting. The heavy line helps prevent tangles and will wear better. Note the special arrowhead. Below, the results of a morning's carp hunt. This string took skill.

by Duane Raver

Photos by the Author

THE temperature was at least 85° when we left Raleigh one late spring day last year and headed northwest to trout country. It was so summery, in fact, that we failed to include even light sweaters for the trip. Less than four hours and 200 miles later we wished for warmer clothing as we stepped out into 55° weather on the laurel-covered shores of Price Lake in Watauga County—a world not only of envigorating temperatures, but one with new sights and smells of deep woods, cloud-shrouded mountain peaks, and sparkling waters. Shouldering its way above the surrounding peaks in the bluish distance was Grandfather Mountain, almost 6000 feet high and visible for miles even on this overcast day.

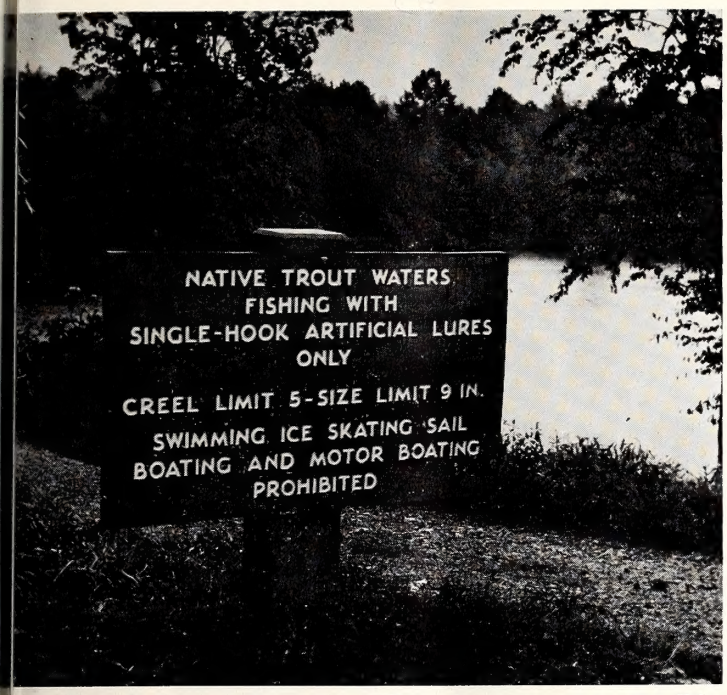
Spring flowers were everywhere and the early flowering shrubs were beginning to break through their tight buds. The month of June would see a height of the floral display. Mists hung on the shoulders of the Blue Ridge and the sun found it difficult to poke its way through low-scudding clouds. A spring rain was pelting the hemlocks at the higher levels adding to the sweet fragrances of the forest. In such a setting is Price Lake, retreat for the weary.

Julian Price, for whom the 4200 acre Memorial Park is named, acquired the land in the late 1930's and early '40's with the intention of creating a vacation haven for the employees of a large insurance company. Shortly after Julian Price's untimely death in 1946, the insurance company donated the area to the National Park Service for public use. Much of the area, which is now the park, was cut over by lumbering interests of Williams S. Whiting from 1912 to 1930. Now, under the watchful eyes of the Park Service, the rolling mountains are gradually reverting to a forested wilderness.

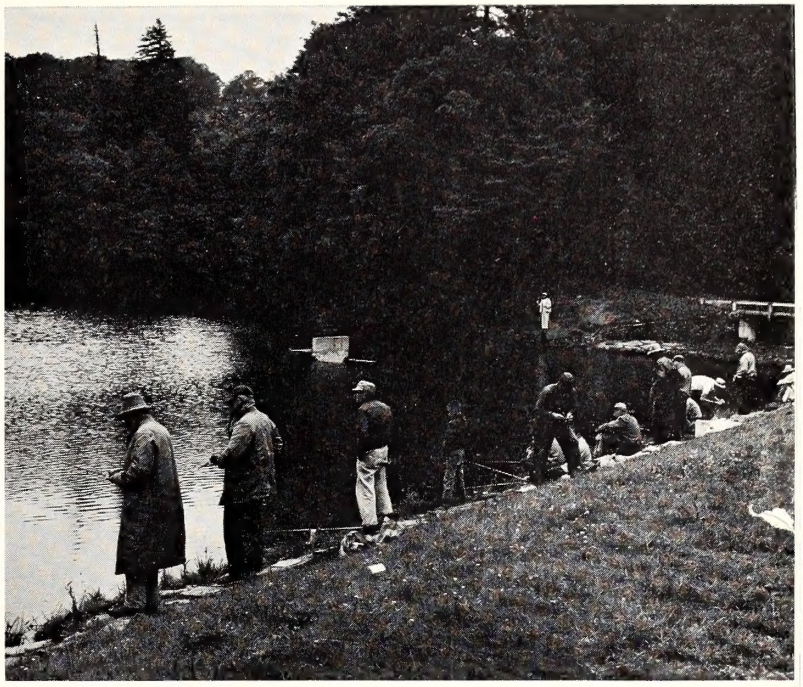
Prior to the timbering operations begun in the early 1900's, virgin stands of chestnut, yellow poplar, and hemlock covered the cool, misty hills. Yellow poplar is coming back, but the chestnut, victim of the relentless fungus blight is gone, perhaps forever.

So popular is this National Park Service lake constructed in 1959, that the surrounding camp grounds are usually full to capacity during the summer season. Twenty-four spaces for small trailers, and 105 camping sites for tents and other camping shelters are provided free of charge both near the lake shore and a short distance away on the other side of the Blue Ridge Parkway. Seventy additional trailer spaces are scheduled for 1965. It is first come, first served, in obtaining a space near Price Lake, and the Park Service limits a season's stay to a total of fourteen days for any one group in order to give more people a chance to enjoy this area. The camp grounds are open May 1 through October.

Almost all the land surrounding the Julian Price Memorial Park is under the control of the National Park Service and is heavily forested with hemlock, fir, and pine. The understory is thick with mountain laurel, rhododendron, ferns, and mountain wild flowers. All the vegetation is rigidly protected and it is unlawful to disturb the plants in any way. Mountain wildlife is quite abundant but often remains deep in the woods. The drumming of ruffed grouse often rolls through the valleys, and at dusk the call of the whip-poor-will is familiar to the Price Lake visitors. Deer pick their way



Although signs on the banks of Price Lake summarize the fishing rules, check with Park Service officials before going fishing.

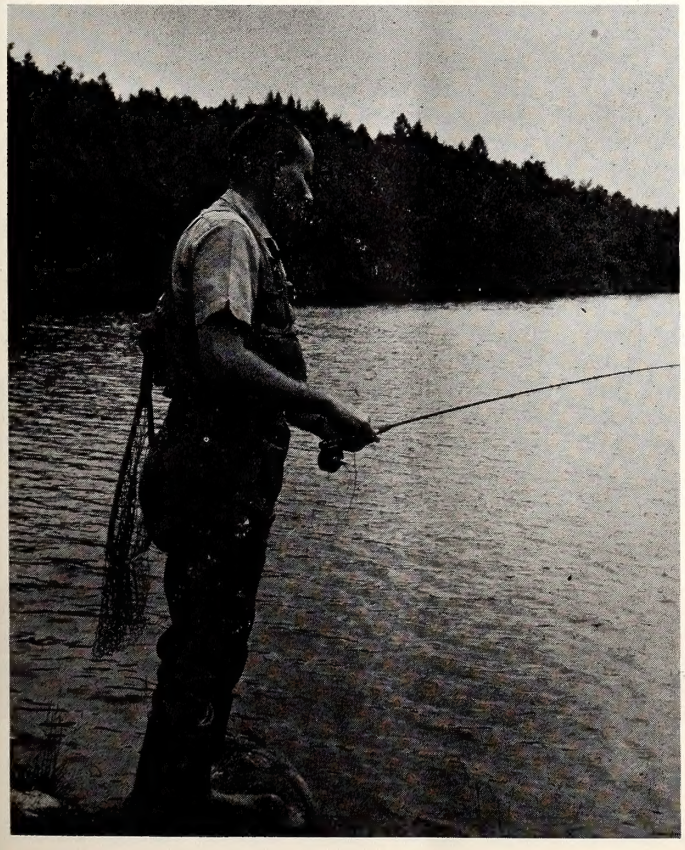


Near-by Trout Lake also furnishes plenty of fishing. Even on this cool, drizzly day, a group of hardy anglers lines the dam.

through the dense brush, and even bobcats go about their business secretly in this forest home. Song birds are abundant and the majestic pileated woodpecker is frequently seen.

The 47-acre lake was constructed on Boone Fork, a trout stream which still sparkles its way over the small dam and provides good fishing much of its length downstream. Both the stream and the lake are good, cold, trout water and are under the management of both the National Park Service and the Wildlife Resources Commission. Strict Park Service regulations prevail and fishermen should check with the Park Rangers before fishing.

The cleared area near the dam is a favorite spot for fishermen. This angler is fishing a wet fly among the rocks just off shore.



Trails are scheduled for construction around the lake and at present access to the lake shore is through some pretty heavy brush. Small paddle boats are permitted, but no motor or sail craft are allowed.

Nature study is a specialty of the Park Service here, and illustrated lectures on various natural elements of the area are given nightly (except Sundays) during the summer. Conducted nature walks are scheduled at various times during the week. Midsummer temperatures rarely go above 80°, and the nights are almost always cool. Frequent showers skip through the mountain peaks and it is best to be prepared for some sprinkles just about every day. Most last only a few minutes and then the sun pops out as quickly as it was hidden.

Fishing in Price Lake has been good during its short history and is restricted to single-hook, artificial lures. Special size and creel limits prevail also. Generally, trout are abundant, particularly in the late afternoon. Wet flies are popular, but often the bright rainbows hit the surface when clouds of insects are hatching.

Additional trout fishing is provided on near-by Trout Lake in the Cone Memorial Park, and bass and bluegill fishing is available at Bass Lake within a few minutes drive of Price Lake.

Helpful literature describing the fishing along the Blue Ridge Parkway, a folder on the National Park Service's "Naturalist Program", and a sheet outlining the camping regulations are available on request from The Blue Ridge Parkway, Post Office Box 1710, Roanoke, Virginia. "The Blue Ridge Parkway Guide" from Boone-Blowing Rock to Asheville, interestingly written by former Ranger and Naturalist Bill Lord, is available from the Stephens Press, Inc., Asheville, North Carolina, for $1.00.

This is an area where Nature prevails, sharing her beauty and bounty with those who will protect her.

How North Carolina's huntin

The 1947 General Assembly of North Carolina created the Wildlife Resources Commission and vested in it authority to set the seasons and bag limits on non-migratory game and fur bearing animals, and regulate the manner in which they may be taken.

This was done so that the seasons and bag limits could be adjusted or modified in accordance with the relative abundance or scarcity of individual species. These adjustments may be made annually, and in case of such emergencies as extreme drouth, fire damage or flood conditions, adjustments may be made within the season.

Field personnel of the Wildlife Resources Commission, including biologists and wildlife protectors, maintain a close watch on wildlife populations throughout the state. These observations provide information on the carry-over of each species from the hunting and trapping seasons as an indication of the production potential for the current nesting and breeding season.

Special surveys are made to determine the population status of species that might have suffered from severe winter weather conditions or that may be temporarily scarce for other reasons.

After field surveys are completed and information gained from them has been recorded, field personnel meet in Raleigh with administrative personnel to evaluate the general situation over the entire state. This is done by going over the regulations of the previous year species by species, evaluating and discussing the present status of each one in the various sections of the state.

These discussions give primary emphasis to the welfare of the species involved, but also the anticipated desires of license-buying sportsmen are taken into consideration. Recommendations of this group are then presented to the Commission for further study.

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NORTH CAROLINA WILDLIFE RE

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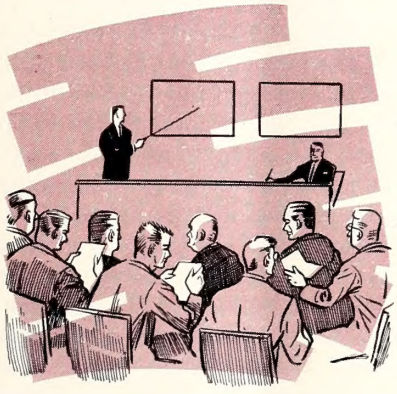

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Once the tentative regulations are established, they are presented to the sportsmen at a series of public hearings, one in each of the Commission's nine districts. Dates, times and places of these hearings are widely advertised through news media and in **Wildlife** magazine.

At these hearings the proposed regulations are explained in considerable detail, and reasons for proposed changes are presented. Sportsmen are invited to express their views and opinions on the proposed regulations, and asked for suggestions as to how they might be improved to fit local conditions. Records are kept of these views and opinions.

During and immediately after the nine public hearings, the Commission receives a considerable amount of correspondence from people who could not or did not choose to attend the public hearings, but who, under a democratic system of government, are entitled to express an opinion.

At a meeting in Raleigh, set for June 15 this year, the Wildlife Resources Commission will adopt the official hunting and trapping regulations for the next season. This is done only after weighing all of the many factors involved and after giving due consideration to the species involved and to the expressed desires of hunters and trappers in all parts of the state.

Once adopted by the Wildlife Resources Commission, hunting and trapping regulations have the effect of law, the violation of which constitutes a crime. They are published by the Commission and shipped to license dealers throughout the state to be distributed to buyers of hunting and trapping licenses at the time these licenses are purchased.

OURCES COMMISSION

Nature's Dilemma

by Joel Arrington
Wildlife Education Representative
Photos by Jack Dermid

MANY millions of years ago, long before man appeared on the earth, and long before the first mammal of any kind had developed, at the time when most of the surface of the earth was covered with lush tropical forests and immense seas, Nature was wrestling with an evolutionary problem.

Up until this time, her accomplishments were impressive. After her initial, and most spectacular, achievement of creating a virus by instilling life into a combination of non-living chemical elements, Nature went on to develop the one-celled animal. Through countless millenniums of trial and error she produced multicelled animals with two layers of tissue. After more eons she made animals with three tissue layers and from there she went on in an orgy of creation to form the flatworms, the roundworms, the earthworms, and the insects. With her left hand, meanwhile, she created a diverse array of plants with which the animals could cohabitate the earth. Nature's most recent successful experiment, up until the time her problem arose, was to place another large group of animals on the earth and give them supremacy over the other living creatures. These were the frogs, the toads, and the salamanders, which we collectively call the amphibians.

But the trouble with the amphibians was that they could never venture far from the edge of the water in which they were born. Some amphibians found that they could leave the place of their birth to search for insects on the land, but since their eggs could not survive when left on dry ground, they always had to return to water to procreate their species.

Nature's methods had never been very efficient. She had haphazardly placed a great number of insects far inland where they could not be reached by the water-bound amphibians. These insects were living and multiplying without any important natural enemies. They were wasted, as it were. The obvious solution to Nature's dilemma was to develop an animal which could multiply its species on land without having to make the perennial trip back to the water's edge.

The root of the problem was in the egg. If Nature could develop an egg which could survive without being immersed in water, she could solve her problem. To do this, Nature took an amphibian's egg and wrapped it in a moisture-holding leathery shell. The animals which finally developed the egg which could withstand dryness are called reptiles.

But it was way back in the Carboniferous Age that Nature's dilemma was solved by developing the reptiles and their land eggs. In the following thousands of years, the success of the reptiles was astonishing. By the Mesozoic Era, which began about 185 million years ago and is called the Age of Reptiles, they ruled the land, the sea and the air. There were flying reptiles, armored reptiles, monstrous vegetarian reptiles weighing 40 tons, and firece meat-eating reptiles.

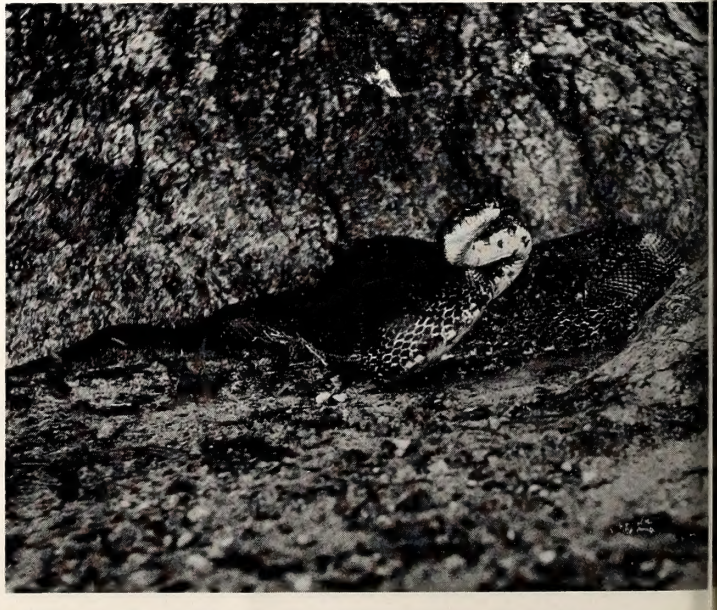
The Mesozoic Era was a warm period in the history of the earth. In later times, glaciers began to move from the poles to the equator, making a progressively cooler climate. But reptiles are cold-blooded animals. They cannot regulate their temperature as can mammals and birds. Since the average yearly temperatures were rapidly getting lower, reptiles did not have time to take on cold-resisting characteristics. Their numbers began to diminish until they found themselves outnumbered by the mammals which could remain warm in a relatively colder climate.

Only the hardiest reptile species remained. Of these, we have today the alligators and crocodiles (25 species), the turtles (300 species), the lizards and snakes (5,500 species), and the tautara (a three-eyed lizard of which there is one remaining species).

But of the surviving reptiles, the ones which were most capable of adapting to the changing environmental conditions were the snakes. What characteristics do the snakes have which enable them, as a group, to survive, we might ask? Probably the most important one is their ability to hibernate. Hibernation is merely a condition in which the animal's

The PINE SNAKE is a powerful constrictor. It is sometimes confused with the bull snake, but the pine snake has a white appearance while the bull snake is generally yellow.

The BLACK RAT SNAKE and the black racer are often confused. The former is white underneath from its chin back about one third of the body length. Both are considered beneficial.



body processes slow down nearly to a stop. It is useful for two purposes—(1) to be inactive when food is scarce, and (2) to escape the effects of cold.

Another characteristic of snakes which enables them to survive is their ability to get food. Some are fast enough or quick enough to pursue and catch their prey. Others lie in wait and kill with poisoned fangs. Still others are hidden by their coloration until their prey comes sufficiently close for capture. Some kill by constriction, while others swallow their food alive.

Many snakes can live for extended periods of time without food. A mouse about every three months will sustain even a large black rat snake in captivity. Most snakes can swallow a larger piece of food than it appears their mouth would allow. This is possible because of a flexible skull which permits the jaws to unhinge and open wide.

The diets of the snakes are extremely varied, which is another reason they have prospered in the Age of Mammals. They consume almost anything from earthworms and insects to slugs, birds, and even mammals as large as a young deer. But most snakes, by far, eat small mammals such as mice and rats. If for no other reason, non-poisonous snakes should be protected because of the job they do in rodent control, except in isolated cases where they do damage to nesting waterfowl populations. The pictures which illustrate this article are of only a few of the snakes which are definitely beneficial to man.

But what is a snake anyway, and how is it different from other animals? It is an elongated, cold-blooded animal with a flexible backbone and hundreds of ribs. It has no legs, although the pythons and boas have "spurs" which are vestiges of limbs found in their amphibian ancestors. The snake has no moveable eyelids nor external ear openings, as other reptiles do. Its eyesight is relatively poor as is its hearing, but its sense of smell is well-developed.

Snakes have their tongues modified into sense organs. By flicking it out, the snake picks up very small air-borne particles which are carried to nerve cells inside the head and perceived as something like odor. The body of a snake is covered with scales which are either keeled or smooth. The scales on the back are in definite rows. Underneath a snake usually has one row of large transverse scales from the chin to the vent. From the vent to the end of the tail there are usually two rows of scales on the ventrum of a non-poisonous snake. Poisonous ones have a single row. A snake sheds its skin all in one piece, while a lizard loses its skin in strips and shreds.

While the snake's amphibian cousins have a gilled larval stage in their life-history (some amphibians retain their gills into maturity), snakes are born with lungs. Most snakes lay leathery eggs which are left alone to hatch; others carry the eggs in the body until they produce the young in a cellophane-like cover which ruptures soon after birth.

We know, then, what a snake is, from what group of animals it derived, and why it was able to survive the rapidly changing environmental conditions of the post-Mesozoic years. The curious student of biology will ask whether the snakes and other reptiles, as a group, gave rise to any more advanced animals than themselves. The answer, of course, is—definitely. The birds and the mammals developed separately from the reptiles and began to compete with them for supremacy. Birds are reptiles whose scales have been modified into feathers while mammals are reptiles whose scales have been modified into hair. Of course, there were other structural modifications, notably in the form of the heart, but the derivation of feathers and hair from scales clearly indicates the linkage of the birds and mammals with the reptiles. Notice sometime the reptilian-like scales on a bird's leg. Observe the serpentine movements of either the yellow-billed or the black-billed cuckoo as it climbs through the foliage of a tree or the semi-tropical anhinga as it swims and dives. There are also structural similarities between reptilian scales and mammalian skin and nail formation. And there is one remaining mammal which lays eggs—the platypus.

If you are fortunate enough to happen on a cache of snake or turtle eggs, examine one closely. It will take you back millions of years to the time when Nature was out on an evolutionary limb and when she discovered how to climb off of it by developing the land egg.

This young RAT SNAKE has just emerged from its leathery egg. Its markings are considerably different from those of adults of its kind. It is already equipped to take care of itself.

While the INDIGO SNAKE which this child is holding is not poisonous, it can inflict a painful bite which is subject to infection. Snakes of this size should be handled with care.

NORTH CAROLINA WILDLIFE

RESOURCE-O-GRAM

A ROUNDUP OF THE LATEST WILDLIFE NEWS

Public Hearings Set for Hunting Regulations

In keeping with established policy (see pages 12 and 13) the Wildlife Resources Commission will hold a series of nine public hearings to give Tarheel sportsmen a chance to express their views regarding the 1964-1965 upland game regulations. Following are the dates, places and times:

May 19, 1964	District 9	Sylva	Courthouse	7:30 p.m.
May 20, 1964	District 8	Morganton	Courthouse	7:30 p.m.
May 21, 1964	District 7	Dobson	Courthouse	7:30 p.m.
May 22, 1964	District 6	Albemarle	Courthouse	7:30 p.m.
May 25, 1964	District 5	Graham	Courthouse	7:30 p.m.
May 26, 1964	District 4	Elizabethtown	Courthouse	7:30 p.m.
May 27, 1964	District 3	Rocky Mount	City Court Room	7:30 p.m.
May 28, 1964	District 2	New Bern	Courthouse	7:30 p.m.
May 29, 1964	District 1	Edenton	Courthouse	7:30 p.m.

Watch That Campfire!

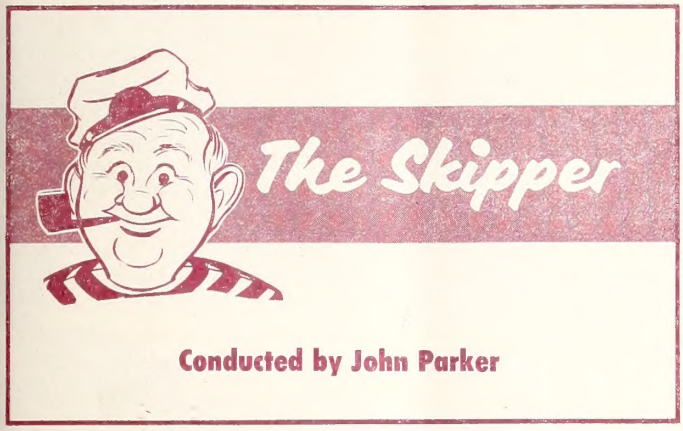
With thousands of hikers and campers and fishermen getting out in the woodlands during the month of May, the Wildlife Resources Commission joins the Forest Service in warning people to be careful of fire. May usually has a spell or two of dry weather when fire hazard conditions reach peak levels. Campfires, matches and lighted tobacco should be used with extreme caution.

Bring That Striper In!

Again this year the Wildlife Commission will pay $20.00 per million for eggs from roe-laden striped bass brought fresh into the striped bass hatchery at Weldon. Large females can produce as much as $40.00 worth of eggs—a good day's pay—and a considerable amount of sport for a lucky angler. Fry hatched from eggs processed at the hatchery will be stocked in suitable waters of the state to increase the extremely valuable striped bass fishery for both sport and commercial fishing.

Shad Up the Cape Fear

During May the U.S. Army Corps of engineers will regulate Lock No. 1 in the Cape Fear River to permit upstream passage of the migratory spawning run of shad.



Conducted by John Parker

IF you were among the thousands who turned out for one of the late winter boat shows, then perhaps the family budget is in for a setback. Whatever it was that attracted you—be it boat show, extensive magazine coverage, or some other types of good old American advertising—your buying appetite is probably as sharp as one of those new stainless steel razor blades. Are you still undecided as to just which rig will fit your needs? The decision can be a rough one unless you do some investigating first. If you have already taken that big step, then maybe you are hoping that you will be as happy with the new boat as is the smiling dealer to whom you just handed a fist full of bills. To you, we say "happy and safe boating."

Anyone who is about to join the fleet should seriously consider every angle and then back off and take another hard look at his "final" choice. Boats today are made to last, to say the least. Unless you enjoy or can afford frequent trading you will be stepping aboard the same craft year after year. One authority reports that a wooden outboard boat will last at least ten years with proper care. Most of us have, no doubt, seen craft of wooden construction much older that are still safely plying the water routes. The aluminum and fiberglass boats are often advertised as "lasting indefinitely".

The point here is that you are quite possibly making a permanent addition to your outdoor gear and you will want continued satisfaction from same. The price tag dangling from the bow handle will be a deciding factor for most skippers. The price, however, can usually be varied by picking a boat made of different material. With the multitudinous makes to choose from, this can be done while retaining the basic style that you want. The price of a typical fourteen-foot utility, for example, may vary as much as $100.00 depending on material and manufacturer.

The kit boat offers another possiblity for saving. Kits are offered in a wide range of boat types from canoes to cruisers and the group that builds its own is reportedly a growing one. A good rule here is to buy as much safe, quality boat as possible for the price that you can afford.

Having ironed out "all" of the money problems we can now consider the most important facet of boat selection. That is, what will the boat be used for **most** of the time. An obvious point, of course, but if we really put the question to work many interesting facts may be uncovered and important answers produced. Some of the questions you will want to ask are: what bodies of water will I use most frequently; how many people do I intend to invite; will the children go along; will I enjoy boat maintenance; will I want to sleep or cook aboard? And on and on. There is no set rule. Questions will vary from car top to cruiser.

The important thing is to ask these questions before you buy. In other words, make an educated purchase, not an impulsive one. Start early, take your time, some of your friends' time, and, of course, that of the boat dealer. They will all be glad that you made the right choice. With a little luck, next season when you step aboard you'll congratulate yourself on your nautical wisdom.

What's New Afloat?

Each year along about February and March, the boating public is offered a look at the latest thing in boats, motors, and accessories. Most boating enthusiasts have, by this time, already acquainted themselves with these improvements and additions. For those of you who for one reason or another have not yet done so, here are some of the highlights for 1964. Fiberglass leads in popularity with unsinkable foam-packed hulls predominating. The use of glass for hulls of large craft continues to grow. The North Carolina-built Hatteras boat is an example of this.

Along with styling and safety, boat buyers will be getting even smoother rides from the wider, scientifically-designed hulls. Outboard Marine's new trihedral hulled fiberglass is an example. No one is in tears over the disappearance of the tailfins; or did that disappear last year? Almost as noticable, but certainly more functional is the squaring off of the bow, making for more room and stability. **Sports Afield** reports that there are more models of portable fishing craft than any other type. Many of these also have the new square bow design.

Yes, the inboard-outboard drive is still going strong and there is even a diesel model on the market. If you have not heard, Chrysler Corporation has entered the field and offers a stern unit to fit each of its engines.

For those who want their cake and eat it too, houseboats are now available with planning hulls. Slow or fast, these babies really have the comfort. The price ranges from a few thousand to as much as a ten-room house that doesn't float.

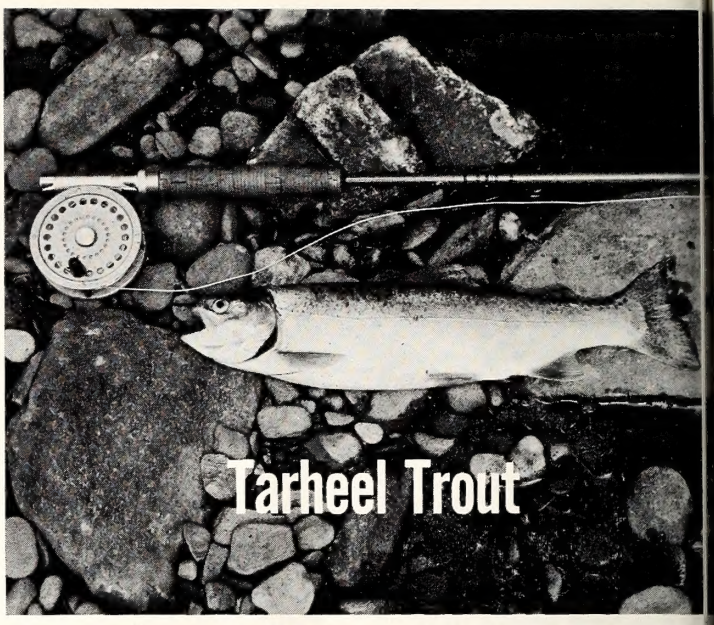
Options leave little to the imagination: TV and electric dishwashers for the cruisers, compact radio gear for the runabout and the best in safety for all. One boating magazine reports that oars may once again become a popular item around the boat dock. Some manufacturers are making boats for rowing for those who want to start off or keep fit with some good old basic boating.

Boat Registrations Expected To Rise

Last year boat registration totaled 44,830. Since annual growth of boats registered has been about 2000 per year, we should expect that the 1964 total will be about 48,000. With perhaps twice this many boats (unpowered, 10 horsepower and under) on the North Carolina waterways, it behooves all boaters to keep a lookout posted, especially in congested waters.

Proper Lighting—Easily Installed

If you are one of the die-hard fishermen who stays until the last minute or if you just like to cruise after sunset, then play it safe with proper lighting. For only a few dollars you can buy a battery-powered bow and stern light kit that is easily detached for stowing. Especially handy for the small boat, Sears is one place that offers this type of lighting.



Tarheel Trout

by Duane Raver

NORTH Carolina streams today very likely contain more trout per mile than were present a hundred years ago. We can only speculate about the number of miles of habitable trout streams available a century ago, but certainly the amount of trout water in North Carolina today is considerably less than that of the mid-1800's. With less water, and much of poor quality, combined with thousands of additional fishermen, how it is possible to have more trout than ever before?

The answer, boiled down to as few words as possible, is "trout management." These two simple words represent quite a complex and intricate story. The story is paralleled and frequently interlaced with "fishermen management" or the manipulation of fishing pressure which, as we will see, is impossible to separate from the management of the trout themselves.

A detailed history of North Carolina trout management would likely take up more space and certainly require more time to read than is practical here. But tracing the high spots of what is now nationally regarded as a highly successful program will provide us with a background upon which future trout management can be based.

North Carolina, geographically, is far from the latitude of prime trout waters. With the exception of a bit of north Georgia and an even smaller part of South Carolina, Tarheel trout waters represent the southern-most habitat of these great game fish in the eastern United States. If it weren't for the fact of the southern Appalachians with their bountiful rainfall and Canadian-like climate, the cold waters of suitable trout habitat could not exist this far south.

Yet in spite of this "borderline" situation, North Carolina has an estimated 2,000 miles of trout streams open to public fishing, and many additional miles that support trout but which are posted or are otherwise closed to the public. Some 26 western North Carolina counties have good trout streams.

As far as productivity, scenic beauty and physical characteristics are concerned, North Carolina has some trout streams that rate with the finest in eastern North America. Certainly, then, with these fine fishing waters and thousands of anglers eager to catch a trout, North Carolina has a perpetual challenge to maintain the quality of her trout fishing.

Perhaps one of the real foundations of our trout program in North Carolina is the Wildlife Resources Commission system itself and the statutes which impart its powers. This system, the result of many years of careful consideration, review of other state's conservation agencies, and the solid backing of North Carolina sportsmen, is often taken for granted and its true merits overlooked.

The operational flexibility of the Wildlife Commission permits the setting of hunting and fishing regulations by this body with the advice of its technically-trained staff, and after considering the wants and wishes of the State's sportsmen. This setup naturally carries with it a large measure of responsibility as well as the opportunity to create effective, efficient policies and regulations aimed at better hunting and fishing.

To say that our present trout program would have been impossible under a different administrative setup is perhaps unfounded speculation. But a glance in the direction of many other states with similar problems but with quite different organizational structures, indicates that progress in fish (and game) management can be painfully slow and all but impossible without the proper administrative system.

It seems rather odd to be examining the functional structure of the organization in order to see the results of a specific program of that group. Yet it is on this "vehicle" that the "load" must be carried. In the case at hand, the trout program of North Carolina, the means of transportation is quick and efficient.

To physically create a trout stream—even in an otherwise natural setting—is obviously impractical. Trout lakes are often impounded where the situation warrants, but usually at considerable cost and sometimes with only fair results as far as fishing goes. The physical creation of more trout water is all but out of the picture. Maintaining the present number of miles of flowing trout streams is quite a task in the face of various logging, mining, farming, and industrial operations.

The prospect, then, is that of a dwindling supply of good trout water, and an ever-increasing army of trout fishermen with more time to fish and increasingly easier access to most of the fishing waters.

To meet this situation, the Wildlife Commission has a multi-barreled trout program. Included are biological investigations of the trout waters, ever-changing and improving trout fishing regulations, and a highly efficient trout production system, all employing the talents of technically-trained biologists and modern equipment.

Practically nothing in the management of any species of fish is final and everlasting. In other words, it's a changing, mobile plan that must adjust to changing conditions, new findings and new philosophies. A program that concludes that "everything is well in hand, it worked last year and the year before, so it will work now and always," is destined for eventual failure or, at best, mediocrity. This indicates another important foundation of trout management: an open mind, and the ability to change when the evidence is conclusive.

This altering of direction and plan often takes a bit of determination and even turning deaf ears to pressure from the "status quo" group. It means that we sometimes must simply go out on a limb and try a certain procedure that at least has a sound basis for trial.

North Carolina's trout program is responsible for providing the best possible fishing in 2,000 miles of trout streams and many acres of trout lakes. Even with Nature on our side (which is difficult to count on season after season), such a project takes money. By their very nature, trout are expensive: to provide suitable homes for, to raise, to put in streams,—and to catch for that matter.

Although more Tarheel trout streams produce their own trout naturally than once was thought, many streams are not physically suited to trout spawning or egg survival.

It is obvious then, in many cases, if we are to have trout to fish for, we must hatch and raise them in hatcheries and place them in the streams. Thus one important phase of the North Carolina trout program includes the building of trout hatcheries and artificially rearing these fish. However, it is a common mistake of most of the general public and a great many fishermen to assume that the raising and stocking of trout constitute the major part of a state trout management program. In North Carolina this is not true, and in any state

A successful trout management program is made up of many elements. Hatching and rearing trout like these tiny rainbows is only a part of the complex system of providing good fishing.

where the artificial propagation of trout is relied upon to perpetuate this fishing, success is anything but complete.

Trout production figures, including the numbers and sizes of fish released in public waters, their cost, etc., measure the success of this phase of the program only so long as the fish are placed in suitable waters according to a scientifically prearranged schedule. In other words, unless the costly fish are released in waters which not only will sustain them, but in waters which actually need stocking, considerable waste will result. The ultimate aim of a trout stocking program is to have 100 percent of the released fish caught. Realistically, however, we rarely catch over 50 percent of the stocked trout.

This may seem like "put and take" meat fishing, but in some streams fish apparently simply don't survive even for a second season. This has been demonstrated by carefully marking all trout released in a given area and then checking all fish caught in this same area over a period of years.

A successful trout management program must satisfy (at least partially) several groups of fishermen. The "put and take" stocking serves the group (and presently it is a comparatively large group) of anglers who go to catch fish and take them home and eat them! Naturally, many of these same fish are also available to fishermen who like to creel an occasional trout, but who go fishing primarily for the fun of catching and releasing trout.

But for the angler who goes to fool big wild trout in a remote stream, other management elements must be considered. An alternative is to attempt to change the minds of any one or all of these groups to conform to modern trout program procedures. Using educational techniques, telling the fishermen of new advances, why certain things are done in the trout program, often will change their viewpoint. It's simply a matter of informing the public—keeping them abreast of the progress of the program. This, in itself, is an important phase of the over-all fish management program.

Providing good fishing for large numbers of fishermen often calls for rather intensive management. The location for this type of work with trout waters in North Carolina is the vast system of Wildlife Management Areas which includes almost 250,000 acres of forested mountain lands, interlaced with trout streams, in the western part of the state. Most of this network of public land is owned by the U. S. Forest Service. It is here that precise checking of trout stocking methods, rate of catch, fish survival, and so on, take place by use of a complete creel census.

Many experimental procedures, which are found to be successful here, are employed or recommended on publicly accessible streams outside the Management Areas.

An index of trout fishing pressure is available from the Management Area data since each fishermen is required to check in and out at access points, leaving valuable information when he is through fishing. For example, in 1947, 15,522 fishermen fished the Management Areas and caught some 58,600 trout. This was a catch rate of 3.8 trout per man. Yet in 1962, with roughly the same miles of streams involved, 36,300 anglers used these areas and took 161,628 trout, for an average catch of 4.4 trout per man. Naturally, the stocking climbed steadily also, but management techniques kept pace with pressure and provided much more than double the fishing success on the same areas.

Although there is no way to know precisely how many anglers fish for trout in North Carolina, we do have a pretty good indicator in the sale of trout fishing licenses. Since 1954, this special license (in addition to a regular State fishing license), has been required of all anglers fishing in the designated mountain trout waters of the state. During the first year, 1954, 24,713 licenses were sold. This number climbed slowly but steadily and in 1962, 47,901 anglers paid the extra $1.25 to fish for trout. The funds derived from the sale of these trout licenses are earmarked specially for trout production and, more particularly, for the costs involved in the construction and operation of Armstrong Hatchery north of Marion.

Thus the pattern for the trout has been set, partially by Nature, and certainly by Man's influences. Good trout waters existed before man arrived on the scene. When he did, many trout streams suffered; some even disappeared. Fishing pressures increased. Trout habitat declined. More trout were needed. Hatcheries were built. Investigation of present trout waters began, and a long-range plan of trout management was launched. Streams still suffer; but trout production methods have been perfected, regulations are realistically

based on scientific fact and in the best interests of trout fishing; research continues to discover better management techniques; education informs the fishermen of the development of their sport; trout fishing—better trout fishing—continues.

With the mounting fishing pressures, however, the inevitable questions began to stir: where and how far can we go with trout harvest? Is there any limit to the fish we can provide? Actually, these are not new questions for they have figured in the program for years. Already emphasis is being switched from "catching and keeping" to "fish for fun". Perhaps the future of trout fishing lies in more catching, but less killing of trout. Any such departure from established past procedures and policies must be preceded by careful investigation and a continuous information and education program.

To provide good trout fishing for more and more anglers, with approximately the same amount of suitable trout habitat available, the same individual fish must be caught more than once. At least this is one approach (although over-simplified here) to the problem. This means that a restricted creel limit must be imposed and that the size limit of even these fish must be increased. This very thing has been tried and will continue on several North Carolina streams termed "Native Trout Waters." These selected streams on Wildlife Management Areas have a special creel limit of five fish, and size limits of nine inches for rainbows and browns, and six inches for brook trout. In addition, only single-hooked artificial lures can be used on these selected streams. In some, this restriction is carried one step further in the direction of sport fishing, prohibiting any lure or bait other than artificial flies to be used.

Actually the pay-off of this type of management with its special creel and size limits can be shown in one stream where stocking ended in 1959. Four years later, in 1963, the catch was 3,370 trout but only 300 were killed. This means that anglers had the sport of catching many fish, returning them, and still kept some nice trout. Post-season checks of this stream by biologists showed that a good population of adult trout remained and that natural reproduction was excellent.

At the end of the present regular trout season, an innovation is scheduled for 1600 miles of North Carolina's trout streams. From the day after Labor Day through October 31, fishing will be permitted with artificial lures having one single hook. This extended season will have a creel limit of one trout, with a size limit of sixteen inches.

This will give the anglers who fish for trout simply for the fun of it an opportunity to enjoy some fall fly fishing and yet maintain about the same trout population for the next spring. What will be the results of such a plan? Only time and the fishermen themselves will tell. But it is a step in the direction of more sport for more people in trout angling.

We keep saying that the amount of trout water, particularly streams, is relatively fixed, and that we will be fortunate in years to come, to maintain the number of miles of trout habitat that we now have. A recently-used technique of "reclaiming" trout streams shows extremely good promise and restores good fishing to otherwise "dead" streams. Streams of good-water quality become infested with undesirable fish such as suckers, catfish, stunted sunfish and so on. When this happens, trout leave and the streams become, for all practical purposes, dead.

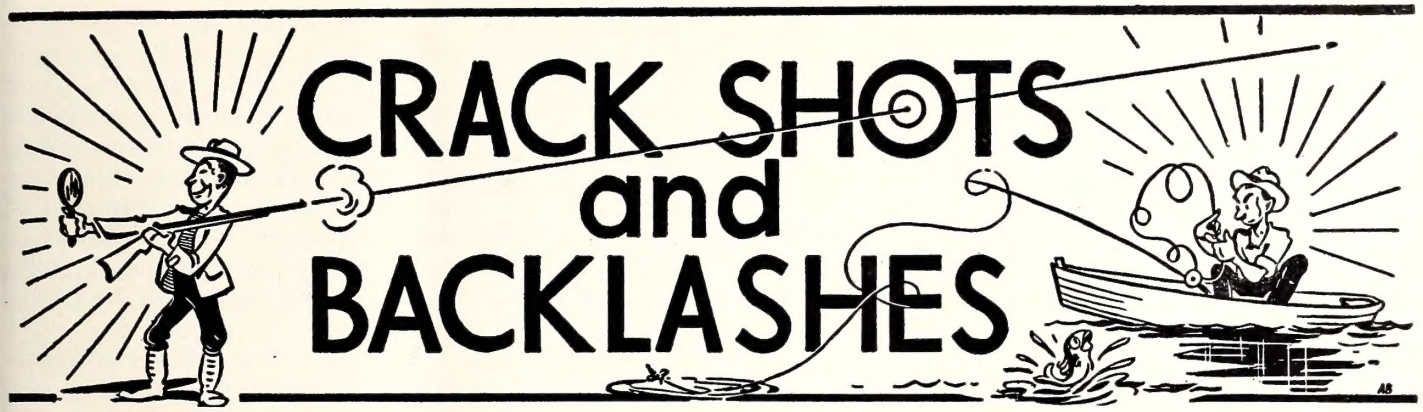
Many of these streams in such dire straits can be restored to good trout fishing by constructing a barrier at the lower end to prevent return of "trash" fish, and then removing the entire fish population by chemical means.

The "initial" stocking of a reclaimed trout stream is done with fish of various sizes to approximate a natural stream.

In order to actually create a "native" trout stream, stocking is carefully regulated to this end. Initial stocking after renovation is done with a typical "pyramid" of a few large trout, more middle-sized ones, and a broad base of many smaller ones. This stocking approximates a natural trout population, or one which might be expected to occur in a "balanced" situation. Additional stocking, if any, is done with fingerling trout only after investigations indicate that the stream can carry more trout than are being produced naturally. This simple-sounding but rather complex and costly procedure is practical on many "sick" trout streams.

It is still a bit experimental, but the success of some 100 miles of streams reclaimed so far certainly shows that it can be done with proper planning and careful techniques. From the data collected so far, it is becoming apparent that the special creel and size limits placed on native trout streams are necessary to sustain good trout fishing. It amounts to "creating" productive trout streams, a trick that is virtually impossible to accomplish otherwise.

All things considered, trout fishing in North Carolina has been good over the years. Whether it is better or worse now than it has been, depends on whom you talk to. There is no doubt, however, that far more trout are caught now than at any time in recorded history of North Carolina. The future? Well, that depends on many things, some of which we cannot foresee at the present time. In the way of a prediction we are safe in saying that with proper management and the cooperation of our sportsmen, trout fishing will continue to provide more sport for more trout anglers, although probably not as much meat on the table for each one.



DEPARTMENT OF LETTERS TO THE EDITORS, FIELD NOTES, AND ITEMS OF INTEREST

Conducted By Rod Amundson

The only direct tie-in the following has with wildlife is that it was sent to us from an organization called Bluebirds Unlimited, Prestonburg, Kentucky. The author is unknown.

"A BUSINESS MAN'S PRAYER"

Teach me that sixty minutes make an hour, sixteen ounces a pound, and one hundred cents a dollar—Help me so to live that I can lie down at night with a clear conscience, without a gun under my pillow, and unhaunted by the faces of those to whom I have brought pain—Grant that I may earn my meal ticket on the square, and in earning it I may do unto others as I would have others do unto me—Deafen me to the jingle of tainted money and to the rustle of unholy skirts—Blind me to the faults of the other fellow, but reveal to me my own—Guide me so that each night when I look across the dinner table at my wife, who has been a blessing to me, I shall have nothing to conceal—Keep me young enough to laugh with little children, and sympathetic enough to be considerate of old age—And when comes the day of darkening shades and the smell of flowers, the tread of soft footsteps and the crunching wheels in the yard—make the ceremony short and the epitaph simple—"Here lies a man". Author Unknown

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The "Who Knows This One?" picture inside the back cover of our February issue brought excellent response from our readers, most of whom urge us to make this type of thing a regular feature. We plan to do so as often as we come across suitable pictures. Maybe some of you have pictures of this nature we might use—for a small honorarium. Be sure to give us positive identification of the scene.

Meanwhile, in case we haven't mentioned it, the February scene is a road on the Holly Shelter Wildlife Management Area. The zig-zag was done deliberately for the safety of deer hunters who use the zigs and zags for deer stands. Most folks guessed the purpose, but a few had the location somewhat misplaced.

Suggestion Box

DEAR SIRS: I would like to take this opportunity to tell you how much I enjoy your magazine and that I am in favor of raising the subscription price to $1.00 per year, and suggest that the additional funds be used to promote a television program devoted exclusively to hunting, fishing, trapping, other gun and water sports and wildlife conservation.

Presently there is such a program being presented on channel 9 Greenville at 6 p.m. daily, and I enjoy it very much but it is mainly devoted to coverage of the ball games although we get some good hunting and fishing films often.

I don't see why the Wildlife Commission could not handle this as it would promote more interest in hunting, fishing, trapping, wildlife photography, trap and skeet shooting, gun and boating safety. J. H. HOLDFORD, JR., HALIFAX

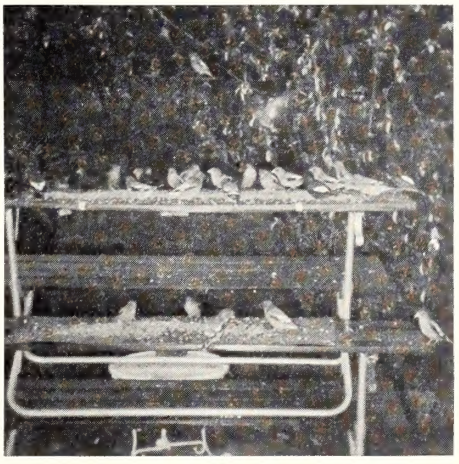
Television production is expensive. It is doubtful that an increase in our subscription price would foot the bill for time on any local station. If enough people are interested, locally, in a TV program of this type, the job can be done.—Ed.

A Gross of Grosbeaks

DEAR SIRS: Thanks to the February issue of Wildlife I was able to identify and observe a small flight (about a dozen) of evening grosbeaks in my back yard. From pictures like this and from articles published in the magazine, I have become more observant and am able to appreciate more wildlife found in this big world around me simply because I know what I'm looking at.

I appreciate and am thankful for the opportunity I have of subscribing to a beautiful magazine that is not cluttered by advertisements, but chocked full of information. JACK GALLION, BOONE

DEAR SIRS: I though this might interest you. A friend of mine, Mrs. June Paxton has trained her birds, that live in the woods near her house, to come for feeding at a certain time each day. One day I was lucky enough to see this wonderful



sight. She was throwing seed on the ground and calling the birds. I did not know what she was doing, but they came and came, and by the time they stopped coming her back yard was covered with what looked like a coat of feathers. I counted two hundred birds, one hundred of which were cardinals. As they finished eating they left one by one, and went back into the woods.

Mrs. Paxton has a large Boxer dog. While she was feeding the birds he watched from the screened porch with us. He watched them without moving an ear and

appeared to enjoy it as much as we did.

I enjoy your Magazine, Wildlife in North Carolina very much and look forward to receiving it each month. CHARLES HOGAN, CHARLOTTE

DEAR SIRS: I was very much interested in the birds on the cover of February Wildlife. There are about ten or twelve that feed at our feeder, and what I would like to know is where they build their nests, bird houses, barns, trees, etc.? Would appreciate any information you can give me about them. MRS. J. L. GRANGER, ASHEVILLE

Evening grosbeaks migrate through North Carolina, but do not nest here. Their summer range is in the northern states and southern Canada where they build fairly elaborate nests in trees, but do not accept birdhouses.—Ed.

DEAR SIRS: For many years we have fed the wild birds in winter. Last winter we were especially rewarded for our efforts by the beautiful assortment of birds that ate regularly at the feeders on our lawn and window sills.

We had native birds in unusually large numbers all winter. In addition to these, we had a most interesting collection of birds we had never observed before. One morning we were amazed to look out on the lawn and see what we conservatively estimated to be 200 (or more) evening grosbeaks. This was indeed a beautiful sight. These birds fed regularly each morning, the number varying somewhat from time to time. They appeared at approximately the same time every day between 7 and 8 in the morning. A few birds lingered in the yard until mid-day or after, then disappeared until the next morning. We wonder why they are called "evening" grosbeaks, when they put in their appearance mornings mostly.

On February 16, we were observing the grosbeaks on our kitchen window sill when we discovered that two of the birds, a male and a female, had metal bands on their left legs. We were within 18 inches of the birds and could see lettering or figures on the bands, but were unable to read them with binoculars because of the other birds crowding in. We will continue to watch in an effort to see if we can determine just what is on the bands. We believe that some one must be conducting an experiment of some sort with these birds by two of them being banded, and we felt that we should report our discovery of the banded pair in Burnsville, just in case some one is interested in knowing how far south they migrate.

We put out approximately 25 pounds of wild bird seed each week, in addition to large quantities of suet, apple peelings, etc., using more if the weather is bad.

We have recently (February) seen a red poll (finch) and a few purple finches feeding on our windowsills. We had never fed these varieties before and are delighted to have them as our guests.

Do you have any descriptive material which would be helpful in identifying wild birds? We have one bird that is smaller than a pine grosbeak, but larger than a purple finch that has a considerable amount of rosy red on head, back, and breast. We have not been able to identify this bird. J. O. and ALMA SHEPHARD, BURNSVILLE

One of the best bird books in Tarheelia is "Birds of North Carolina" by Pearson and Brimley, available for $5.00 from the N. C. State Museum, Raleigh. It has excellent descriptions, life histories and color plates for identification; 434 pages.—Ed.

Try It

DEAR SIRS: I have found a way to keep the birds out of the tobacco burners. Put screen wire around the opening of the smokestack; this will allow the smoke to come out and prevent the birds from getting into the burners. JIMMY PENNY, ANGIER

Class Work

DEAR SIRS: This morning I had 22 disappointed boys and a few girls in my seventh grade when we opened the March issue of Wildlife, and did not find an answer to the picture on page 31 in the February issue.

The class enjoys the Wildlife Magazine so much and we have several on display at all times. Miss Barber has been to our school and gave us copies of "Our Wildlife Neighbors" for the library. We use these a great deal as textbooks on conservation in Science and Social studies. I can truly say that the boys have no more interesting school work than they find in your booklets. Often teachers use my materials in studying conservation.

I have encouraged the children to subscribe for the magazine and we have several subscribers in school. OLA STAFFORD, TEACHER, LIBERTY

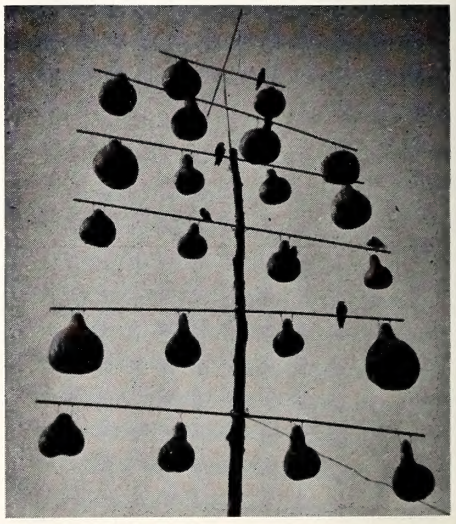
Return of the Martins

You don't have to live in the rural areas of North Carolina to enjoy the wonderful wildlife we have. City residents can't exactly provide for our ducks and geese, but we can enjoy a good many of the migratory song birds and entice them to stop over as they travel their flyways looking for a home.

I became interested in purple martins while visiting my sister and brother-in-law, Mr. and Mrs. Warlick Avery, at their Swan Pond Dairy farm in Burke County, just out of Morganton, N. C. The martins migrate from Brazil and other South American points to their farm in the early spring and then leave the latter part of July. Everyone who visited their farm enjoyed the graceful flight and the song chatter of the pretty birds.

I decided to see if these migratory birds could be enticed to stop over at my house in Gastonia. In 1952 I made a martin house with 16 rooms and had it up in the early spring waiting for the martins. Six martins visited the house that summer but they would not take to the house too well. They would fly around and they seemed to be afraid of something and occasionally light on the house but would fly away. This was repeated all summer.

The following year, with advice from a martin lover here in Gastonia, I put up some gourds. The martins liked the gourds better



This is a martin housing development in use. Persistence paid off after several trials and apparent failures. All is well now.

but still would not build nests nor spend the night. From 1952 thru 1960 I tried something different each year to persuade these birds, like moving the pole and gourds from one spot to another, and I could tell that was the secret of making them stay. In 1961 I put one pole away from the trees in an open area and immediately they went in and out of the gourds, began building nests and I was in business.

After the first year, they seemed

to feel that area of my yard belonged to them. I have had them build in nests eight feet above the ground and can walk under them without having them fly away. Now the martins will build in nests beside the trees or just about anywhere I put a gourd. Since finding a home, they have built in the wooden houses I had up for them, which they previously would not use.

From my observation, the purple martin is one of the most fascinating of all the birds. I have many other species of birds and all seem to get along well together, after the martin has shown them in which part of the yard to stay! The sparrow and starling cause a little worry but the constant chatter of the martin seems to disturb them too much and they usually move on. The beauty of the martin is in its graceful flight, its swiftness, its maneuvers in flying while catching insects, especially near sundown, the period of mating when all the martins are selecting their partners and gourds, the co-operative plan they have for helping each other build nests and feeding their young.

It is a sight to see about 95 nests full of young martins and all the activity going on. They show you something new each day. Each nest usually contains three or four young birds and you can imagine the congestion trying to feed these as they grow larger. The casualty rate for the young is sometimes high as the birds grow and push each other out of the nest. A stray cat will get some of the young, but a good number still survive.

In 1952 there were only a few residents of Gaston County who had martins and the number of martins was estimated at 75. Now about 15 of us have become enthused over them and we figure the martin population in Gaston County for 1963 was at least 750 birds. We put up a martin house at the Gaston County Nature Museum last spring and two pair built nests. We hope to have a large colony next year. Mr. R. M. Schiele, director of the museum, plans the construction of a nature trail and hopes the martins will add to the beauty of the grounds.
Jack W. Wilson, Gastonia.

This is Looking Glass Falls in the Davidson River section of the Pisgah Game Preserve. It represents one of North Carolina's most valuable resources: Water. Clean water in abundance can be ours again if we are willing to plan and work for it. It is a big job, but it won't just "happen."

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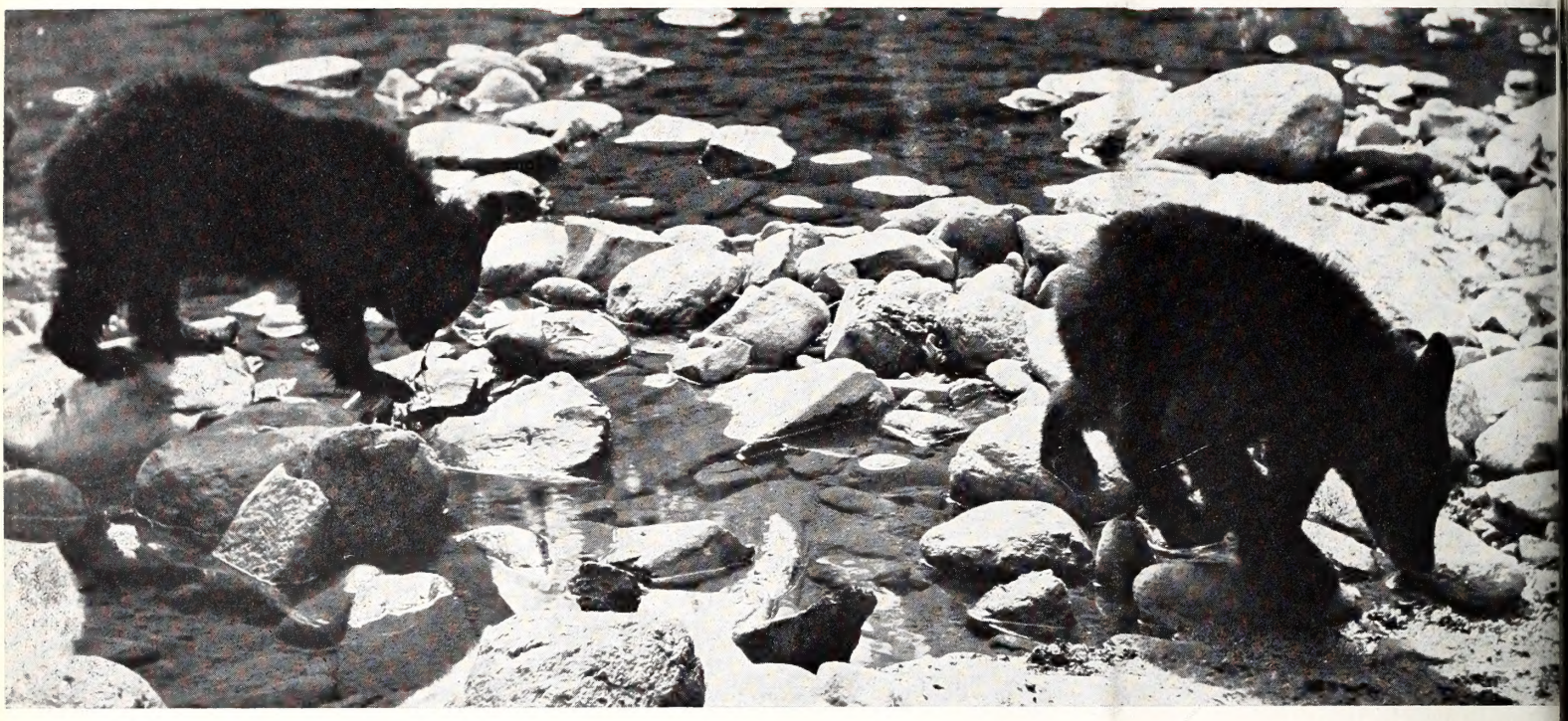

Wildlife PRODUCES FOR NORTH CAROLINA

Hunting and fishing are Big Business everywhere. In North Carolina people spend at least $100,000,000 each year in the pursuit of fish and game. That is big business and good business. Why? North Carolina is unequaled anywhere in the nation in the variety of fish and game offered to sportsmen. You can catch mountain trout — brooks, browns, rainbows — in the mountainous "Land of the Sky" or quarter - ton blue marlin at the edge of the Gulf Stream off Cape Hatteras and Cape Lookout. In between is a variety of upland and migratory game ranging from Russian wild boar to bear, deer, wild turkey, to ruffed grouse, bobwhite quail, rabbits, squirrels, and woodcock. Five major river watersheds provide fishing for bass, bream, pickerel, and such seagoing species as striped bass, shad, and herring. Reservoirs provide walleyes, white bass, and crappies in addition to other game species. Meanwhile farm ponds and mill ponds by the tens of thousands provide quiet, relaxed fishing for people who like to fish without going in for expensive tackle or costly fishing trips. For the wildfowler, North Carolina provides varieties of migratory game birds ranging from Canada geese to mourning doves. The seasons are long, and the bag and creel limits are liberal. You may hunt native game for almost three months, migratory game birds for almost two. There is no closed season on any game fish except mountain trout. No wonder then, that hunting and fishing in North Carolina are big business. No wonder that industries locate here. Employee morale goes beyond good wages, good roads, good schools, and good churches. It is affected by time off the job—and plenty of healthful outdoor recreation to be enjoyed during leisure hours. To make sure that hunting and fishing will be Big Business in North Carolina and to make sure that businesses will want to locate here, North Carolina carries on a sound, progressive program of wildlife conservation designed to make this a better state in which to locate, live, and to grow!

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Great Adventure

This day-old wood duck is ready to face the world after taking the plunge from his wooden box home. The downy young use their sharp claws to clamber up the rough lumber of the nesting box, hesitate a moment at the round entrance, and then, wings beating, plummet down to the rest of the family to begin the great adventure.

Photo by Jack D

Wildlife in north carolina

The official publication of the NORTH CAROLINA WILDLIFE RESOURCES COMMISSION, Raleigh. A monthly magazine devoted to the protection and restoration of our wildlife resources and to the improvement of hunting and fishing in North Carolina.

State of North Carolina

TERRY SANFORD
Governor

North Carolina Wildlife Resources Commission

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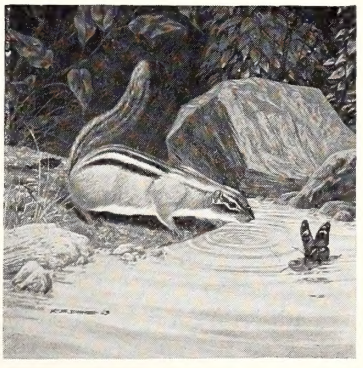

Summer is here and it appears that living is easy for this fat, eastern chipmunk. His curious nature halts his drinking, and he seems to be wondering about the gaudy butterfly invading his private water hole. The chipmunk in North Carolina is generally restricted to the western half of the state where they find nuts, seeds, and berries in abundance. They are quite shy, but may learn to take food from a person's hand. Painting by Bob Dance.

WILDLIFE IN NORTH CAROLINA recognizes the need for close cooperation between State and Federal conservation agencies and the people who hunt and fish—to bring about a restoration of our renewable resources. The Editor gratefully receives for publication news items, articles, and photographs dealing with the North Carolina out-of-doors, but reserves the right to reject materials submitted. Full credit is given for all materials published.

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Boating RULES OF THE ROAD

By Jim Beard

THE State of North Carolina with its lakes, rivers, reservoirs, farm ponds, ocean and coastal sounds, offers the boatman every type of boating pleasure. From Fayetteville, the Cape Fear River winds its way into Wilmington. Along this 100 miles of river the boatman must pass through three locks. Along the coast, besides the off-shore fishing, there is the inland waterway. From Morehead City north, are the Outer Banks, some of which can be reached only by water. Farther inland we find natural lakes, ponds, and power reservoirs of all sizes and in all kinds of settings.

Since we have such a wide variety of water types, we must also realize the challenge to us as boatmen. We must have a large amount of knowledge to fully realize the pleasure that our boats offer us. The advancement made in recent years in hull design and motor dependability has made it possible for the small outboard boat in the hands of a competent seaman to venture into any of these waters.

Unlike automobiles, which are limited to traveling on roads, boats may move in any direction, so long as there is enough water under their keels to clear the bottom. As a result, two or more boats are unusually subject to converge on the same spot at the same time. Therefore, the rules of the road have been established to determine which boat has the right of way, and which vessel must give way in a meeting, crossing, or passing situation. They also state which whistle signals must be given to avoid confusion. In addition, they cover regulations governing the required lights that must be carried by boats of all classes. These lights provide pertinent information at night when your boat itself may not be visible. They indicate the type of your vessel, the direction in which you are heading, or whether you are anchored, aground, or in distress.

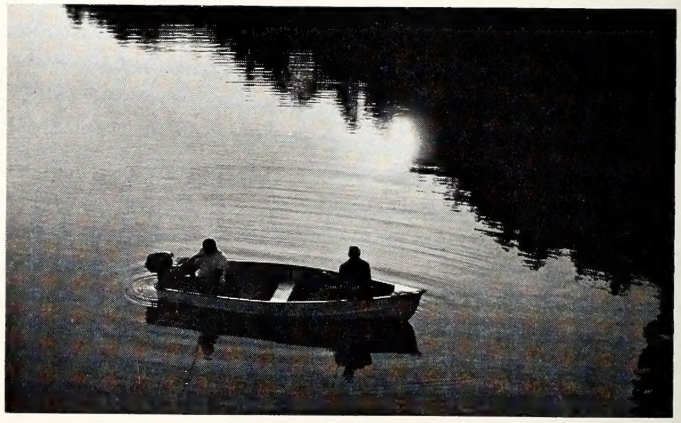
The purpose of establishing right of way is to prevent collision, and thus provide for the safety and protection of life and property. There is only one way to learn how to handle a boat correctly: that way is by practice alone. No amount of printed matter, rules, or laws can accomplish this. However, the knowledge of basic boat-handling principles helps a great deal, especially when combined with an equal amount of experience. The skipper must become familiar with his duties upon the water, and must practice them. He should practice them on every occasion whether his fellow boatmen do or not.

The Golden Rule for small boat handling is, "Safety first and keep to the right." The area around one's boat located clockwise from dead ahead to two points abaft the starboard beam is called the danger zone. On a clock face this would be from twelve o'clock to four o'clock. This is the area that should give the skipper the greatest concern. Other boats in your danger zone have the right of way over your boat, and are called the "privileged vessels." Your boat must keep clear of other boats in your danger zone. Boats located outside of your danger zone which are approaching your course must give way to you, and thus become what is called the "burdened vessels." You have the right of way over all burdened boats.

Under the rules of the road, the privileged vessel has the right of way. In all of the rules, no matter to which phase of boating they apply, the privileged vessel must hold her course and speed. The burdened vessel must use every means to keep out of the way of the privileged vessel.

When boats are on parallel courses going in the same direction, they may gradually converge, creating a crossing situation. Therefore, the boat which has the other on her starboard side must keep out of the way of the other boat. When boats are on parallel courses going in opposite directions, nearly head-on, both boats should alter their course to starboard and pass port to port. When boats are on parallel courses going in opposite directions, but each is far enough to port or starboard that no course change is necessary to pass safely, each must hold its course and speed.

Boats of all types while underway must keep out of the way of boats fishing, including fishing boats at anchor or with nets, lines, and trawls. No vessel is permitted to engage in fishing in a channel or fairway, nor obstruct navigation in any way. The boats underway should give all boats fishing a wide berth in order not to disturb them by their wakes.



Jack Dermid

Fishermen have an obligation to anchor away from navigation channels and other thoroughfares. Watch these danger spots.

In an overtaking or passing situation, the overtaking boat is always burdened until free and clear. This is the only situation in which a power boat would have the right of way over a sailboat. In all other situations a sailboat has the right of way over a power boat. A sailboat, however, must not endanger a power boat by suddenly tacking directly in the path of a power boat, without due warning, when alternative action may be safely taken.

The horn or whistle, whether operated by hand, power, air or mouth, is used to give signals to other boats. It should not be used to attract attention, wave at friends, or in any way except to signal other boats. On international and inland waters and on the Great Lakes, whistle signals vary some-

what. However, here we will consider only inland rules.

One short blast (about one second duration) can be used in any of the following situations: when changing course to starboard; when maintaining course to starboard to allow safe passing on parallel courses, port to port; when a privileged vessel indicates she will hold course and speed when crossing courses; when crossing courses the burdened vessel answers one short blast indicating she understands privileged vessel will hold course and speed; when overtaking vessel requests to pass on overtaken vessel's starboard (right) side. By answering one short blast you grant the request of the other vessel to overtake you and pass on your starboard side, indicating it may be done with safety.

Two short blasts may be used in any of the following situations: when changing course to port; when maintaining course to port which will allow safe passing on parallel courses starboard side to starboard side; when overtaking vessel requests to pass on the overtaken vessel's port side; when granting request by another vessel to overtake and pass on your port side, indicating it may be done with safety.

Three short blasts indicate, "My engines are going full speed astern", and they have no other meaning.

Four or more short blasts indicate DANGER, and they have no other meaning. The danger signal may be used in the following situations: to indicate that the other vessel's course and intentions are not understood; to signal an emergency; to indicate to an overtaking vessel that the overtaken vessel considers it unsafe to pass as requested.

One long blast (10 to 12 seconds duration) is given by a vessel where visibility is less than ½ mile and because of a bend in the channel and high banks. This is a warning, not a passing signal. One long blast is also given when leaving a dock or berth. This is a warning signal, not a passing signal. One long blast is given by motor boats as a fog signal when underway in inland waters. One long blast should be sounded at intervals of not more than one minute.

Whistle signals are not given unless danger of collision exists. If there is doubt or uncertainty as to whether danger of collision does exist, it should be assumed to exist. Whistle signals are not given between a power boat and a sailing boat or two sailing boats. In fog, mist, falling snow, or heavy rain when vessels cannot actually see through, only fog signals are given.

We should keep in mind that our boat has two sides—port and starboard. The word port has one syllable; the word starboard has two syllables. If one simply remembers the word port—one syllable—one blast; the word starboard—two syllables—two blasts, he will have little difficulty giving and obeying whistle signals.

If the oncoming boat gives you one blast on her whistle, it is your duty to answer with one blast of your whistle if all is well. The signal of one blast means the boats must pass port to port. If two blasts are given and answered, associate this with the word of two syllables starboard, and the boats will pass starboard side to starboard side. This rule holds good in all instances of meeting and crossing.

Motor vessels are forbidden to use what is known as cross signals, that is, answering one blast with two blasts. When a signal is correct according to the rules, but for reasons unknown to the other vessel it is either not safe or cannot be complied with, one should at once sound the danger signal of four or more short blasts. In such a case the boat should be stopped or reversed, and should not proceed until proper whistle signals have been given, answered, and understood,

Rod Amundson

Because of their lack of manueverability, sailboats, when under sail, almost always have the right of way over power craft.

and conditions have been established to allow both boats to proceed safely.

In addition to sounding the proper whistle signal, it is essential that the helmsman indicate his action by swinging the bow of his boat sharply to port or starboard as the situation may indicate, for a moment, because, in many instances, the whistle signal of a small boat cannot be heard for a very long distance. When the helmsman of the oncoming boat sees the bow swing, even if he failed to hear or understand the whistle signal, he immediately recognizes what your intentions are.

A boat backing should sound three short blasts on her whistle. When a boat is backing, her stern is considered her bow. Whistle signals are given as if she were going ahead.

Whistle signals in no way alter the rights of privileged vessels or the responsibility of the burdened vessel. The vessel which first signals gains no advtange or disadvantage. Should the burdened vessel whistle first, it does not remove any of her responsibility even though she should attempt to gain a privilege from the privileged vessel.

The rules of the road are written to prevent collision rather than cause it. Situations may develop which, if the rules were followed, collision would be inevitable. Due regard should be taken to any special circumstances which may make departure from the rules necessary to avoid immediate danger. When in thick weather or other causes the vessel which has the right of way finds herself so close that the action of the burdened vessel alone cannot prevent collision, she should take any action necessary to prevent collision. The responsibility for an accident, to a greater or lesser degree, may be placed on the skipper of both boats. If for any

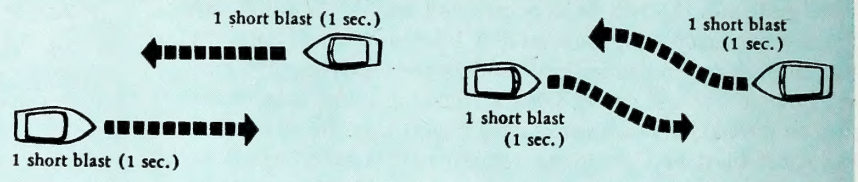
When you're faced with this sight, it's too late to think about who has the right of way! Any rules must be used with common sense. Be sure the other skipper knows what you're going to do.

Evinrude Motors

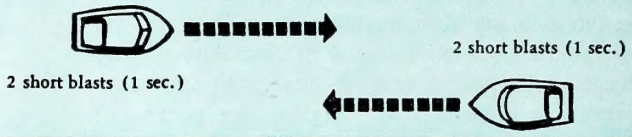
The three diagrams shown at right were taken from the U. S. Coast Guard's pamphlet "Recreational Boating Guide", CG-340. This handy booklet may be obtained for 40 cents from the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C. The situations pictured are among the most common encountered by smallcraft skippers. You should know what to do.

INLAND PILOT RULES

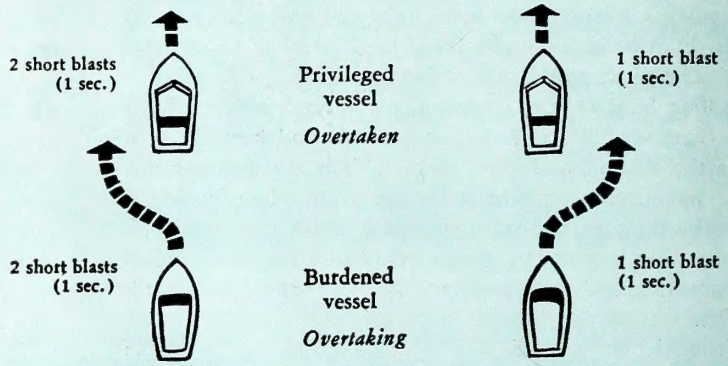
Meeting Head and Head or Nearly so



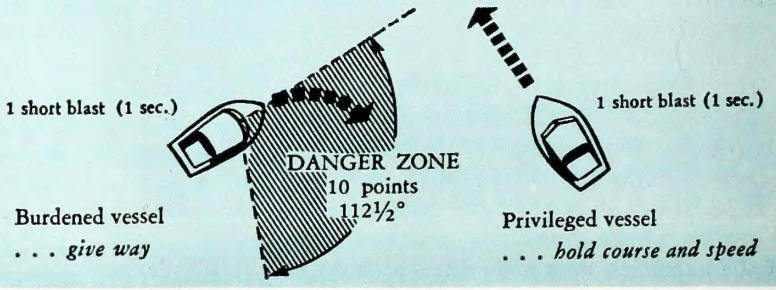
It shall be the duty of each to pass on the port side of the other when meeting head and head or nearly so.



Overtaking Situations



Crossing Situation



reason a collision cannot be prevented by the action of one boat, the burdened vessel, the other must do all in her power to prevent collision. In the case of small boats, which are able to stop rapidly and are able to maneuver easily, there may be little to relieve them of some of the responsibility for a collision.

A tug with a tow is considered one vessel and is regarded as one vessel. Under the rules she has no more rights than any other motor boat. However, such an outfit is unwieldy. Small boats should exercise caution and not insist on their right of way. In a crossing situation, even though the small boat has the right of way, courtesy would indicate that you should sound two blasts and slow down and pass astern of any large, less maneuverable boat or ship.

Row boats must take into consideration their ability to maneuver, and their small size, and keep out of the way of power and sailing craft. When row boats are in distress or their action is uncertain power boats should stand clear of them.

When a motor sailer is operating under sail and power, she is considered a power boat, and has no more rights than a power boat. If she is under sail alone, she has all the rights of a sail boat. It must be realized that even at close distances it may be impossible to determine whether or not she is using power. In a situation such as this, common sense would indicate to a power boat to consider her under sail alone, and that he has no rights. However, the vessel carrying sail, whether she is under power or not, must take no action to confuse the power boat or create a dangerous situation.

The rules of the road apply to all vessels when underway. They apply to all boats whether they are making headway or sternway. They apply to craft adrift and not under control. They apply to all craft whether driven by stern, motor, or sail power, including ferry boats, pilot boats, tugs and tows, sailing vessels, and vessels propelled by hand power and the current. A boat is considered underway unless she is anchored, aground, or made fast to the shore. Except for these three conditions she is considered underway and the rules of the road are applicable.

On land in the case of automobiles going down well-marked streets and highways, with their red lights and stop signs it is a relatively simple matter to avoid collision. While boats have a wide expanse of water in which to navigate, and since their courses constantly cross even though traffic may be less concentrated, much more caution must be exercised. Every boat operator should know as much about the rules of the road on water as he does about traffic laws on land. If we start practicing the rules of the road now, they will soon become as much of a habit as driving down the right side of the road and stopping for a red light.

National Wildlife Refuges In North Carolina

John D. Findlay
Chief, Division of Wildlife
Bureau of Sports Fisheries and Wildlife

THE national refuge system had its beginning on a tiny, east Florida mangrove island which President Theodore Roosevelet set aside in 1903 as a sanctuary for nesting pelicans. Even at that early date the squeeze on wildlife resources had reached serious proportions. For some species it was already too late. An alarming number of additional species, including many non-game mammals and birds, were on the endangered list. The results of many years of misuse of our natural resources, particularly forests and wildlife, could no longer be ignored.

Well before the turn of the century, many States had enacted regulations restricting bag limits and seasons and protecting certain species; however, it was not until Roosevelt's appearance on the scene that really effective steps were taken. Aldo Leopold in his book, **Game Management,** states: "Then came Theodore Roosevelt, with the idea of 'conservation through wise use.' Wildlife, forests, ranges, and waterpower were conceived by him to be renewable organic resources, which might last forever if they were harvested scientifically . . . 'Conservation' had until then been a lowly word, sleeping obscurely in the back of the dictionary. The public had never heard it. It carried no particular connotation of woods and water. Overnight it became a national issue."

It was during this period of conservation awakening that the idea of national refuges was conceived and grew. The early refuges were established to protect species which were otherwise unprotected. As early as 1921 it was recognized that one of the solutions to the problem of shrinking wetland habitat and the preservation of the waterfowl resource was a system of refuges designed to supply the needs of waterfowl on the breeding grounds, along the migration routes and on their wintering areas. This recognition resulted in passage of the Migratory Bird Conservation Act in 1929, which provided the first real Federal legislative authority for a broad program of refuge acquisition and development.

Today, some 43 years later, the Bureau is still working on this premise. The national wildlife refuge system now extends throughout the United States and, as of June 1963 included 288 national wildlife refuges which encompassed a total of almost 29 million acres of land and water. Not included in this total are a number of refuges which have been approved for acquisition since that date and 90,000 acres which have been acquired in the North Central States as waterfowl production areas.

Of the total number of national wildlife refuges presently in existence, about 220 are for waterfowl; 46 are special purpose refuges such as the small island refuges in Florida which serve primarily to protect shore and colonial nesting birds; and 22 are big game or wildlife range areas located in the western United States and in the State of Alaska. The Arctic Wildlife Range in Alaska, containing 8,900,000 acres, is by far the largest refuge in the entire system.

The primary objectives of the national wildlife refuge program are: (1) the protection of migratory birds; (2) the preservation through public ownership of an adequate segment of the overall migratory bird breeding, migration and wintering habitats; (3) the protection and preservation of indigenous and endangered species of birds, mammals and other wildlife and their habitat; and (4) the provision for public enjoyment of migratory birds and other wildlife resources.

U. S. Fish & Wildlife Service

National wildlife refuges are strategically located in the four major waterfowl flyways. For the most part they form chains which extend from north to south along the major flight lanes of migrating ducks and geese. In the Atlantic Flyway, of which North Carolina is a part, there are 56 national refuges; 49 are in existence and 7 are in the process of being acquired. There are 7 refuges either in existence or planned in North Carolina including Mattamuskeet, Swanquarter, Pea Island, Mackay Island, Pungo, Cedar Island and the Pee Dee.

Seven national wildlife refuges may appear to be a large number for one State; however, it must be realized that North Carolina is an extremely important waterfowl migration and wintering area. All together, North Carolina winters approximately 400,000 waterfowl, while well over a million utilize State habitat during the spring and the fall migrations. These seven refuges and the part that each plays in the national waterfowl management program, or will play when acquisition is complete, are discussed separately below.

MATTAMUSKEET REFUGE

The 50,000-acre Mattamuskeet Reguge is probably the best known national wildlife refuge in North Carolina and, for that matter, probably the best known along the entire

Atlantic Coast. This refuge annually winters 100,000 to 130,000 Canada geese and 2,000 swans and furnishes migration and wintering habitat for peak duck numbers in excess of 50,000. The refuge contains excellent natural waterfowl habitat but because of the large number of birds present, it has been necessary to supplement the natural food supply with agricultural type foods which are grown on a cooperative basis by local farmers.

Mattamuskeet is a nationally known waterfowl hunting

U. S. Fish & Wildlife Service

This is a well-known landmark at Lake Mattamuskeet and the meeting place of thousands of goose and duck hunters each fall.

area. The North Carolina Wildlife Resources Commission, in cooperation with the Bureau, conducts the waterfowl hunting program on the refuge which annually provides hunting opportunity for 3,000 to 4,000 sportsmen. Mattamuskeet also attracts large numbers of fishermen, sightseers, amateur and professional photographers, students of wildlife conservation and others interested in observing waterfowl and other wildlife. For the past several years, the refuge has played host to over 30,000 visitors annually.

SWANQUARTER REFUGE

Swanquarter Refuge, also located in Hyde County, is administered by the Mattamuskeet Refuge staff. This refuge, which contains about 43,000 acres of land and water, was established primarily to provide protection for diving ducks including such important species as redheads, canvasbacks, scaup, goldeneyes and buffleheads. Because most of these species are in short supply and are frequently found in mixed groups, public hunting on the refuge is not warranted. Saltwater sport fishing is the primary recreational use at Swanquarter Refuge. One of the chief attractions is a recreation area which includes a swimming and fishing pier extending more than 1,000 feet into Rose Bay.

Many refuges have multiple uses: for example, this fishing pier at the Swanquarter Refuge in Rose Bay provides good fishing.

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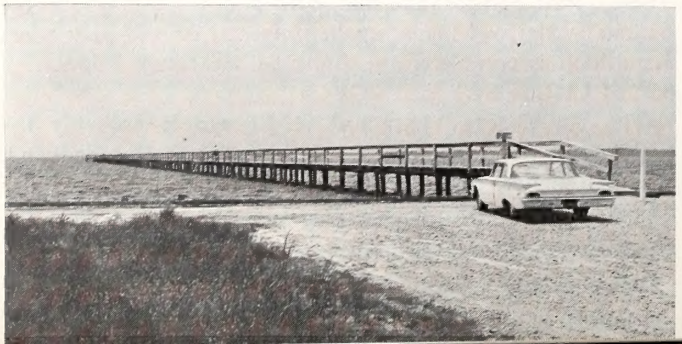
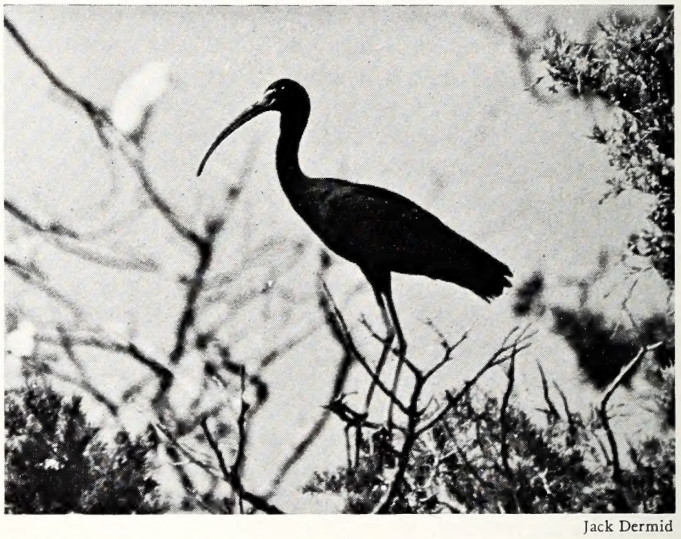


PEA ISLAND REFUGE

Pea Island Refuge, located on the Dare County Outer Banks immediately south of Oregon Inlet, encompasses about 5,880 acres of land and about 30,000 acres of adjacent waters in Pamlico Sound. This refuge is an important wintering area for ducks and Canada geese and serves as the southern terminus for the greater snow goose which is found only on the Atlantic Coast. Approximately 25,000 waterfowl winter on this refuge. While public hunting opportunities are not available on the refuge proper, hunting is permitted by the National Park Service on designated marsh lands immediately to the north and south of the refuge.

Pea Island is unique among southeastern refuges in that it supports nesting populations of blue-winged teal and gadwall in addition to the more common black duck. Pea Island also serves as an important production area for gulls, terns and shore birds. During the summer months, large numbers of wading colonial nesting birds frequent the island marshes and shallow water impoundments. Glossy ibis and various



Jack Dermid

This is a glossy ibis, which like other water birds, benefits from the Pea Island Refuge. Many return here to nest each year.

egrets and herons return each year to nest in a rookery located on the refuge.

Facilities have been constructed for viewing waterfowl and other wildlife at Pea Island and large numbers of persons are attracted to the refuge each year for this purpose.

MACKAY ISLAND REFUGE

Mackay Island Refuge, which is located astride the North Carolina and Virginia line in the Currituck Sound-Back Bay area, plays host to large numbers of greater snow geese as well as Canada geese and puddle and diving ducks. When acquisition is complete, this refuge will contain approximately 8,700 acres.

Under present law, the Secretary of the Interior is permitted to open up to 40 percent of a national wildlife refuge area to public hunting. While it is not certain when waterfowl populations wintering in the Mackay Island area will warrant additional harvest, public hunting is planned as a part of the future recreational program on the refuge.

PUNGO REFUGE

Pungo Refuge, located about 25 miles northwest of Mattamuskeet, holds promise of becoming a very important waterfowl wintering and migration area. This 11,500 acre refuge was activated in early 1964. Acquisition is almost

complete. Large numbers of Canada geese and puddle ducks, chiefly pintails and mallards, are trading into this area from the Mattamuskeet Refuge and it is expected that an active management program will yield good results.

It is anticipated that a public hunting program will be offered at Pungo as soon as refuge population levels warrant and the refuge development program has advanced to the point that the resource can be given adequate protection. Other features of the overall recreational program to be offered at Pungo include nature trails, observation towers, photographic blinds, picnic shelters and access roads for sightseers.

When development is complete, it is expected that the Pungo Refuge will furnish public recreation opportunities for 30 to 50 thousand persons annually.

CEDAR ISLAND REFUGE

The Cedar Island Refuge, which is located on the south side of Pamlico Sound about 30 miles northeast of Morehead City, has not yet been activated. A significant portion of the area is under option, however, and the Bureau expects to complete negotiations on about 43 percent of the 16,887 acre area by the end of the year.

Proposed development plans for this refuge include the construction of shallow impoundments similar to those the North Carolina Wildlife Resources Commission has constructed on the Gull Rock Wildlife Management Area in Hyde County. Following development, Cedar Island will become an important link in the chain of coastal refuges that provide migration and wintering habitat for waterfowl.

PEE DEE REFUGE

The Pee Dee Refuge, which will be located in Anson and Richmond counties, was approved for acquisition in August 1963. The acquisition of this 11,000 acre area is just beginning, therefore, and it is likely that purchase negotiations will extend over a period of years. The Pee Dee Refuge area has excellent potential for the development of waterfowl habitat and there are sufficient numbers of waterfowl migrating to and through the Pee Dee area that excellent populations of both ducks and geese can be built up within a reasonable period of time.

Recreational plans for the Pee Dee call for public hunting when population levels warrant, public fishing, observation towers where visitors can view waterfowl concentrations, picnic shelters, nature trails and if funds permit, a visitor center which will contain displays and various aids for demonstrating and teaching conservation education.

These seven refuges, comprising some 147,000 acres, will play a major role in the migratory bird conservation program, not only in North Carolina but also in the Atlantic Flyway. The Bureau of Sport Fisheries and Wildlife is working closely with the North Carolina Wildlife Resources Commission and with interested individuals and groups in the local communities to provide the best possible use of these lands. Protecting and preserving waterfowl and other migratory birds is the primary refuge objective, of course, but the Bureau recognizes the opportunity and need for developing a well-rounded management program of which public use is an integral part.

These are greater snow geese, which concentrate each winter at Pea Island. If it were not for our efficient national wildlife refuge system, these and many other birds and mammals would be in dangerously short supply. It is up to us as sportsmen and conservationists to support plans for maintenance and expansion of these areas so vital to future supplies of wildlife.

U. S. Fish & Wildlife Service

NORTH CAROLINA WILDLIFE

RESOURCE-O-GRAM

A ROUNDUP OF THE LATEST WILDLIFE NEWS

Hunting Regulations To Be Set June 15

The Wildlife Resources Commission will meet in Raleigh June 15 to establish hunting and trapping seasons for the 1964-1965 season. The Raleigh meeting follows a series of nine public hearings held in each of the Commission's districts where sportsmen were given an opportunity to express their opinions as to how the seasons on non-migratory game and furbearing species should be set.

Boating Safety Practices Urged

The month of June marks an upswing in pleasure boating activity in North Carolina, and the Wildlife Resources Commission urges all persons using boats on the waters of the state to use extreme caution in boat operation. A law passed by the 1963 Legislature requires that operators of all boats powered by machinery be equipped with approved lifesaving devices for each person aboard, and that during night operation all boats powered by machinery must be equipped with a stern-mounted white light or a readily-available and workable flashlight to warn off other boats.

Migratory Game Seasons Set By Federal Government

Many Tarheel hunters wonder why published regulations they receive from the Wildlife Resources Commission do not contain information on mourning doves, marsh hens, woodcock, snipe, or waterfowl. Reason is, regulations on migratory game birds are established by the U. S. Fish and Wildlife Service, and information on seasons and bag limits pertaining to these species is not available to the Wildlife Resources Commission at the time upland game seasons are set and published. Regulations regarding migratory bird hunting seasons will be available by September 1 from the federal government.

Cornell Given National Award

J. Harry Cornell, Chief of the Wildlife Resources Commission's Division of Inland Fisheries, brought national recognition to himself and to North Carolina last month when he received one of the American Motor Company's awards in the field of professional conservation. The award was given for Cornell's outstanding work in the field of Fresh-Water Fish management in North Carolina. Effects of his work in North Carolina will be felt throughout the nation.

To Catch a Fish

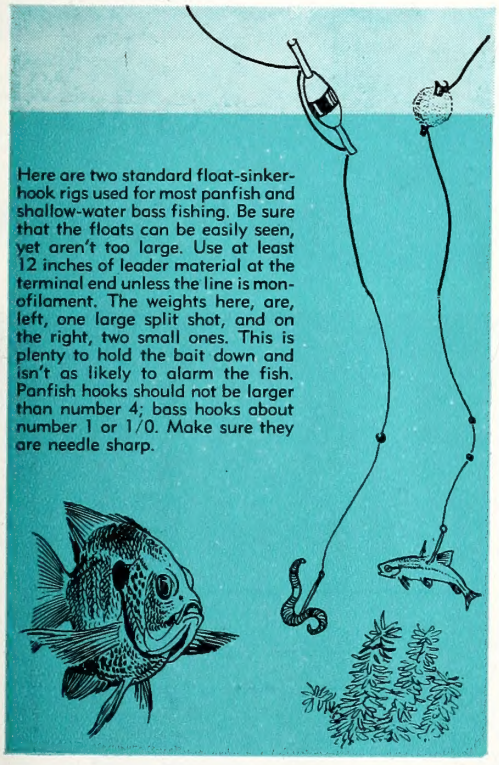
WITHOUT going into a lot of well-meaning philosophy on the subject, the basic truth generally is that we go fishing to catch fish. We may or may not keep all we catch, but let's face it, the trip is almost always remembered longer if we boat a few.

So, with our objective of hooking and landing fish firmly in mind, the next step is to sort out the ways—legal ways—that will best do just that. This most certainly must include the use of natural baits. Let's hasten to add that this doesn't mean artificial lures can't hold up their end of the full fish stringer; they can and do. But this is about natural baits and rigs for fishing them. It doesn't cover the entire list of natural baits nor does it exhaust the possibilities of the various rigs that can be used. You may have a favorite that is omitted.

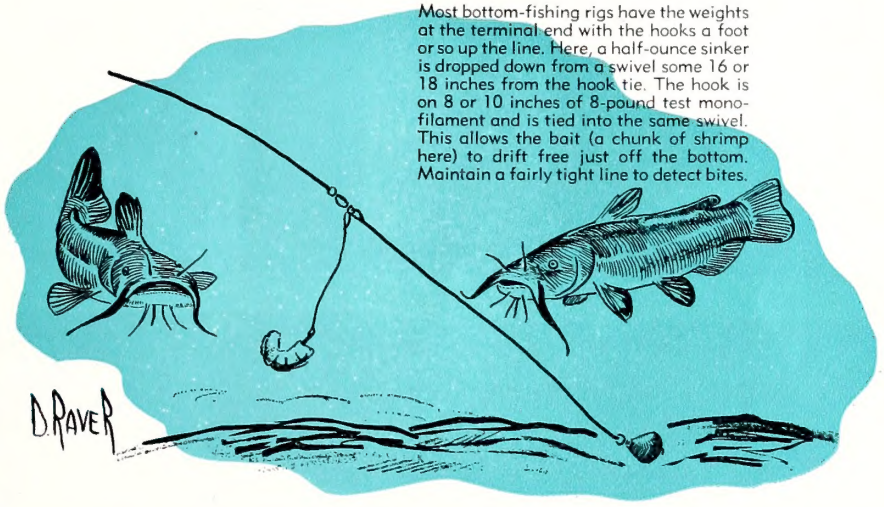
If we were to select a bait that day in and day out takes the most fish and the most **kinds** of fish, the earthworm would have few close competitors. It is available much of the time, easy to keep alive, and fairly easy to use. The fact that the earthworm is only now and then found naturally in the water doesn't seem to bother the fish nor minimize the bait's effectiveness. Fish generally snap it up like they eat this delicacy all day long.

But there are certain refinements that make the angleworm even more effective. Perhaps the greatest error made by most of us is the use of a heavy sinker when either a very tiny split shot or no weight at all would be better. This mistake is followed closely by a hook that is far too large.

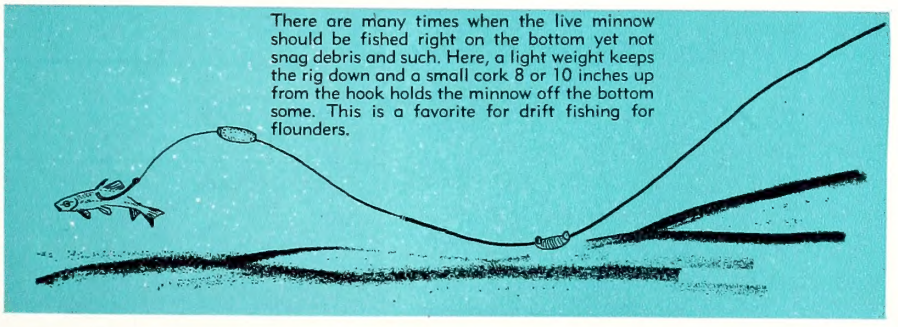
About the best way to show the basic rigs for fishing natural baits is by some sketches, and that's what we've done on this page. Certainly the live minnow rates some space along with a few other natural offerings. The rigs shown are often interchangeable, that is, the bait on one set up could be used to better advantage on one of the others.



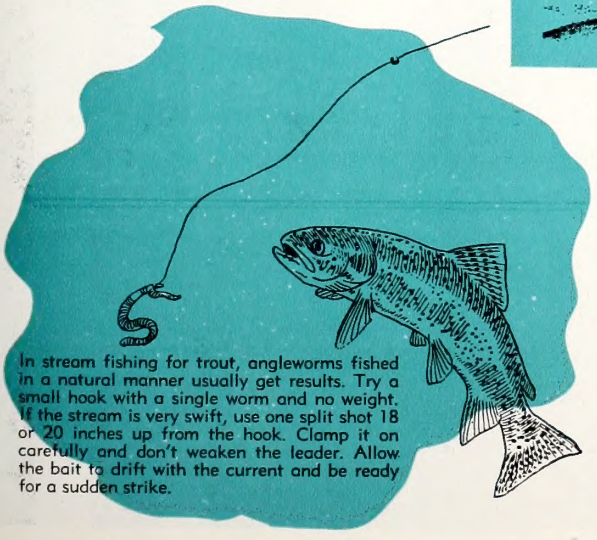
Here are two standard float-sinker-hook rigs used for most panfish and shallow-water bass fishing. Be sure that the floats can be easily seen, yet aren't too large. Use at least 12 inches of leader material at the terminal end unless the line is monofilament. The weights here, are, left, one large split shot, and on the right, two small ones. This is plenty to hold the bait down and isn't as likely to alarm the fish. Panfish hooks should not be larger than number 4; bass hooks about number 1 or 1/0. Make sure they are needle sharp.



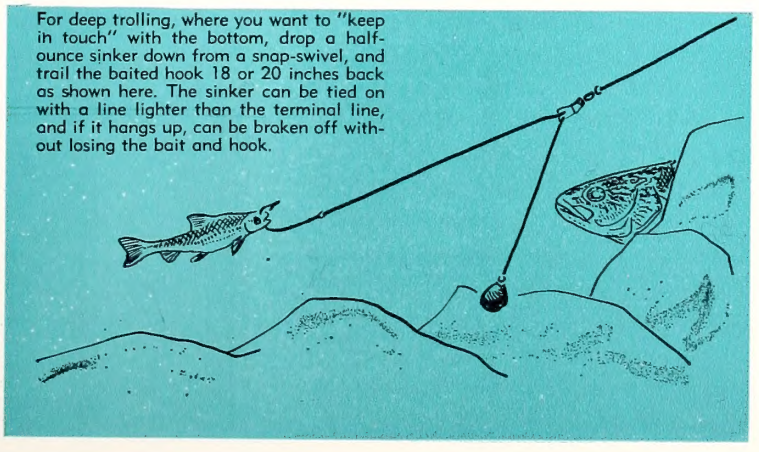
Most bottom-fishing rigs have the weights at the terminal end with the hooks a foot or so up the line. Here, a half-ounce sinker is dropped down from a swivel some 16 or 18 inches from the hook tie. The hook is on 8 or 10 inches of 8-pound test monofilament and is tied into the same swivel. This allows the bait (a chunk of shrimp here) to drift free just off the bottom. Maintain a fairly tight line to detect bites.



There are many times when the live minnow should be fished right on the bottom yet not snag debris and such. Here, a light weight keeps the rig down and a small cork 8 or 10 inches up from the hook holds the minnow off the bottom some. This is a favorite for drift fishing for flounders.



In stream fishing for trout, angleworms fished in a natural manner usually get results. Try a small hook with a single worm and no weight. If the stream is very swift, use one split shot 18 or 20 inches up from the hook. Clamp it on carefully and don't weaken the leader. Allow the bait to drift with the current and be ready for a sudden strike.



For deep trolling, where you want to "keep in touch" with the bottom, drop a half-ounce sinker down from a snap-swivel, and trail the baited hook 18 or 20 inches back as shown here. The sinker can be tied on with a line lighter than the terminal line, and if it hangs up, can be broken off without losing the bait and hook.

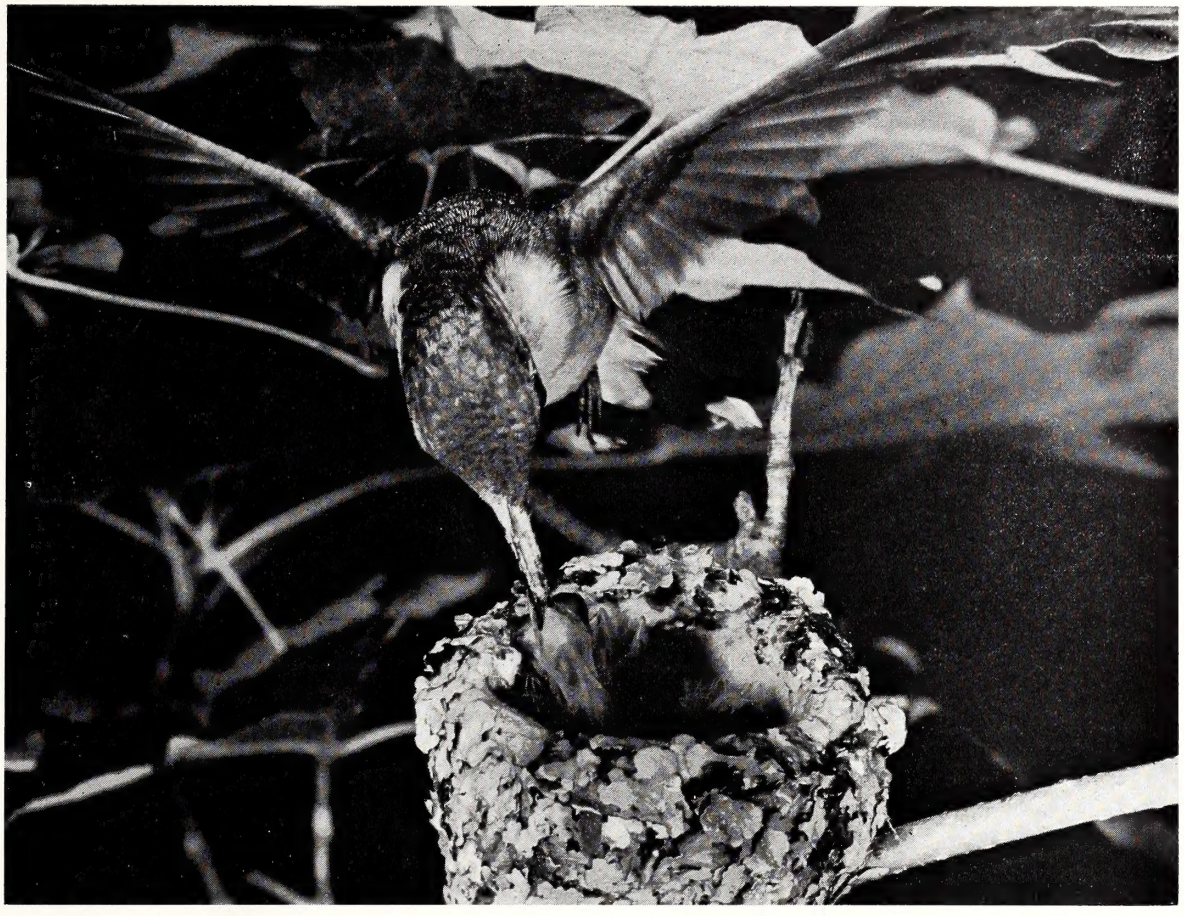
care and fee
HUMMINGI

Photo Feature by
Karl Maslowski

THE ruby-throated hummingbird arrives in North Carolina in mid- or late April and departs when the weather cools in October. The photos here show intimate glimpses of this dainty bird rarely seen by most of us.

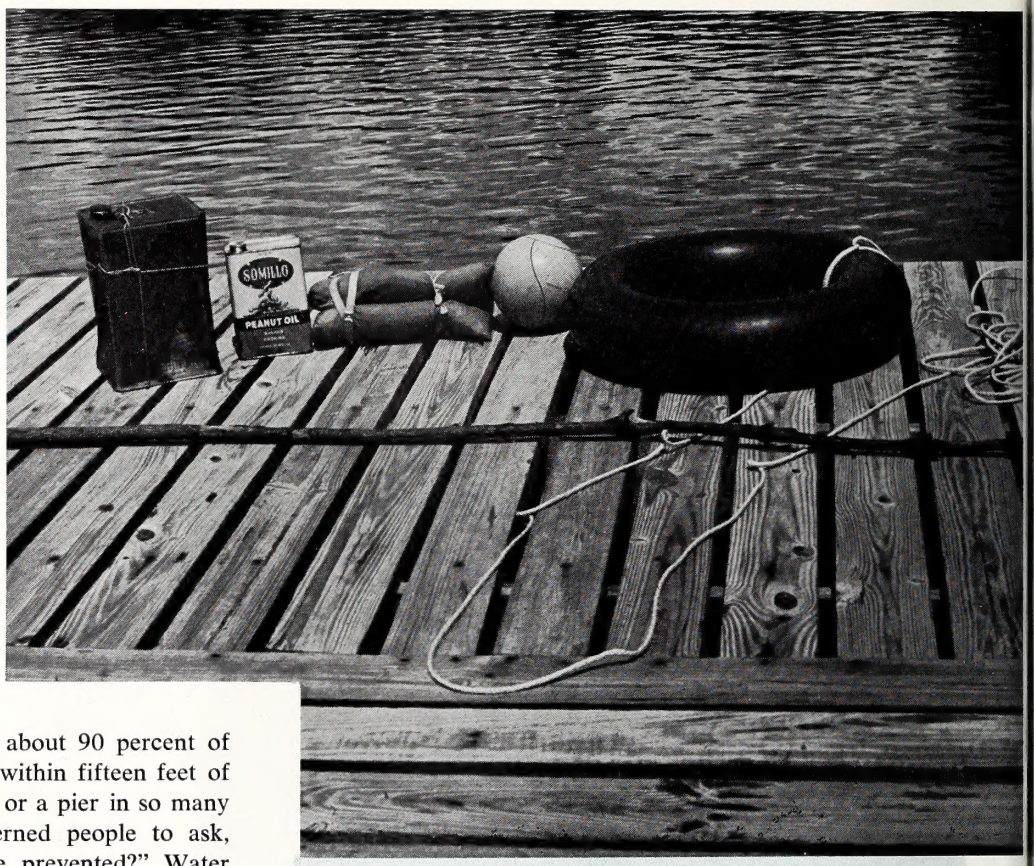
The female incubates her eggs (above) and shows us one of the two tiny eggs in the walnut-sized nest (middle photo). She hovers in the air to feed the four-day old young (far right). A close-up of this operation is seen at right. Two-week old young crowd the nest as the female patiently feeds them. At three-weeks of age they are attracted by mother as she hovers just out of sight of the camera.

ing of
RDS



Reach Row or Throw

Photo Feature by Luther Partin



Almost anything that will float can be utilized for water safety. Items for reaching may vary from a fishing pole to a small sapling shown above. With a little imagination you can round up a supply of life-saving devices. THROW is the method needed below. Try to pitch the float beyond the person in the water. Be sure a stout line is attached.

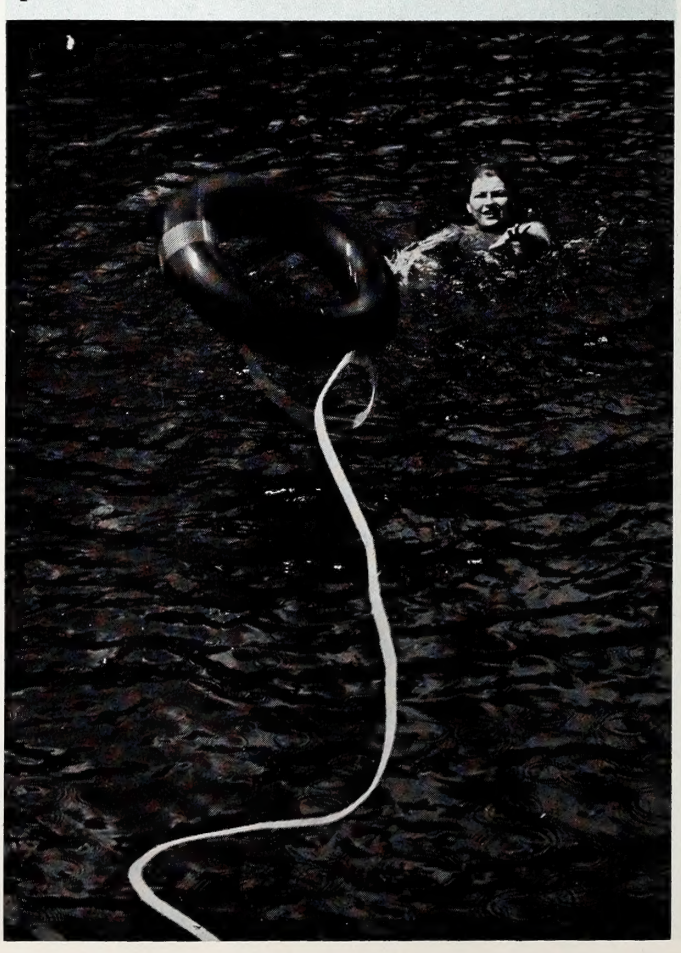
UNLESS this year is an exception, about 90 percent of the people who get drowned will do so within fifteen feet of safety. The nearness of dry land, a boat or a pier in so many of these cases has caused many concerned people to ask, "Why can't more of these tragedies be prevented?" Water safety workers say that they can be prevented if life-saving equipment and a plan of action are available. Water emergencies usually occur at the least expected moment. There is seldom time to go for help or rescue equipment. It must be at hand and ready for use.

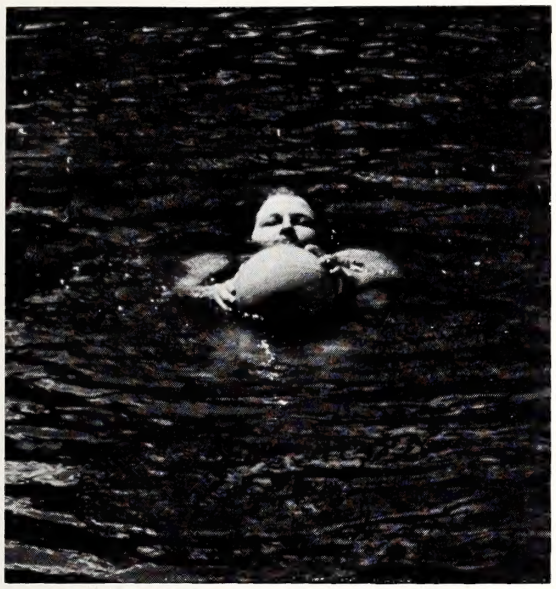
The purpose of this feature is to illustrate a few measures that can easily be carried out to achieve a high degree of safety around the lake, pool, farmpond, or the old swimming hole.

Any remarks concerning water safety should be prefaced with the admonition, **"learn to swim",** if at all possible, and equally important, **"don't horseplay around water."** It goes without saying, if you want help when in trouble, don't engage in water activity when you are alone. If you are not experienced in water rescue, do not go into deep water to help a person in distress—"reach, row, or throw", instead. Reach with a hand, foot, stick or pole. Row if the location is too far for other methods (see photo for accepted procedure). Throw a floating object if the distance is too great for reaching. There are literally dozens of items around the home that have enough buoyancy to keep you from drowning. Among these are large inflated balls, plastic jugs, oil or gas cans, tire tubes, large gourds, and others that may be available.

When the distance is too great for any of these and entering the water is the only alternative, carry one of the flotation items with you, preferably attached to a stick or pole. This will, as in all the other methods described here, eliminate the need for physical contact in the water, which should be avoided at all costs, unless you are experienced in water rescue.

Probably the greatest temptation is to leap into the water and pull out a drowning swimmer. This is also the surest way to guarantee a double tragedy. Keep your wits about you! Try to calm the swimmer, and execute your rescue efforts quickly, efficiently, and above all, with safety to everyone.





Even a volleyball will support the weight of an average person until help can reach the victim.

ROW when reaching or throwing is impractical. Always approach with the stern leading, as it is more stable than the sides or bow. Don't leave the boat.

REACH with anything long enough. Pull in quickly and smoothly, passing the pole behind you. Never enter the water yourself unless you are certain that rescue can be accomplished successfully. Quick action with anything within reach is better than waiting for other help or equipment. Preparation for emergencies may avoid them. Know what to do.

After pulling the victim in, stay in position that will enable you to pull the swimmer from the water. Keep low and grip the pier or anything that will keep you from being pulled into the water. The simple act of extending a hand or foot to a person in trouble can prevent many drownings, if the rescuer keeps his head.

Bottomland and Swamps + Wildlife = $$$

By T. Stuart Critcher
Assistant Chief, Division of Game
North Carolina Wildlife Resources Commission

This is a discussion of the natural resource opportunities and responsibilities under Public Law 566.

THE Watershed Protection and Flood Prevention Act, PL 566, authorized the Secretary of Agriculture to cooperate with state and local agencies in planning and carrying out works of improvement for soil conservation. These works of improvement may include measures which will lessen flood damage within the watershed and can include flood retarding structures, stream channelization, clearing and snagging stream channels and banks, and land treatment measures for maximum control of runoff.

Basically this program is a good one. The conservation of soil is necessary and vital to the welfare and economy of the people of the nation. The conservation of the other natural renewable resources—water, forests, minerals and wildlife—is equally necessary and vital to the welfare and economy of the people of the nation. The watershed program affords ample opportunity for retention of wildlife habitat and a potential for the development and improvement of wildlife habitat.

However, a review of the progress of work under the program thus far, indicates that fish and wildlife resources are being damaged to a greater degree than they are being benefited. Information on this came from a questionnaire survey of 14 states which comprise the membership of the Southeastern Association of Game and Fish Commissioners. At the time of the survey (1962) the Soil Conservation Service had received 901 applications for watershed planning, involving over 50,800,000 acres in these 14 states. At that time, North Carolina had 46 applications. At present there are 62 applications in North Carolina involving 2,900,000 acres. A survey conducted in 1962 reveals that there are at least 235 potential watershed project areas in North Carolina. From this it is apparent that the watershed program is not only important—it is big, and capable of making a tremendous impact on the natural resources of the state.

In the Coastal Plains Region of the state, drainage is a significant feature in all watershed projects. It is this drainage feature that is of primary concern to the North Carolina Wildlife Resources Commission, especially when this drainage is extended to include hardwood bottomlands and swamps, which are so vitally important in sustaining certain wildlife species and in the production of valuable hardwood timber. This concern is not solely that of the Wildlife Commission; it has been expressed by other conservation agencies, by individual sportsmen and sportsmen's organizations and by individual landowners who are familiar with the ultimate changes that have resulted from drainage of hardwood bottomlands and swamp areas.

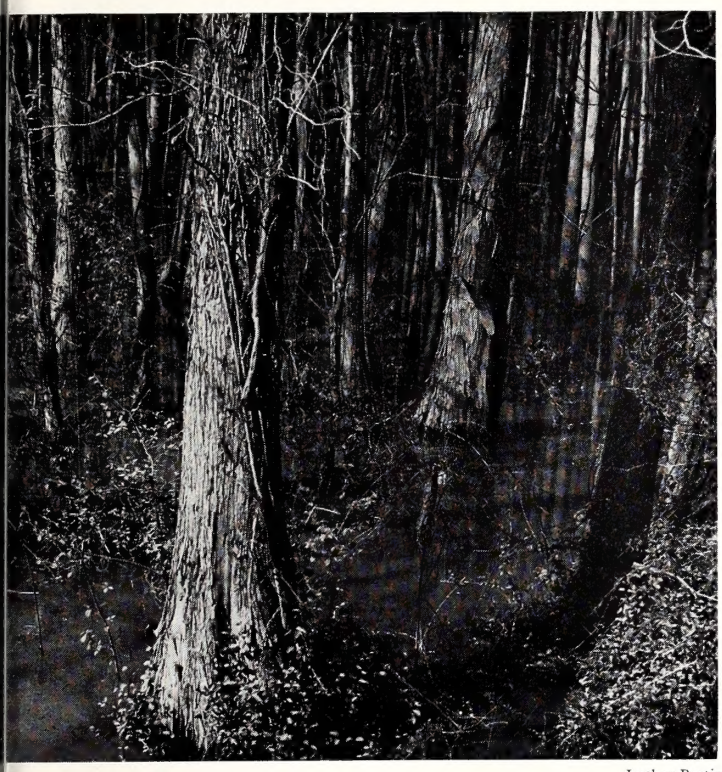
Why, you may ask, are these particular areas so important to wildlife—so important as timber producing areas—so important to the individual who owns them—and so important to the welfare and economy of the state and its people?

First let's consider some of the characteristics of these areas. Hardwood bottomlands produce such tree species as ash, sweetgum, blackgum, maple and oak. Such areas are further characterized by standing surface water, at least part of the year, usually during the winter. Swamps produce cypress and tupelo gum and have standing surface water except during unusually dry periods. Often both types are relatively free from human activity due to limited vehicular access. Wildlife, such as squirrels, rabbits, raccoons, and wood ducks are common in these areas. Deer, turkeys, mallards, black ducks, minks and muskrats are found in varying numbers, depending on the particular location. These wildlife species occur here due to the physical characteristics just mentioned. Expressed another way, on these wet bottomlands these wildlife species can find the necessities for existence—food, such as acorns, mast of sweetgum and ash, and gum berries; water for drinking and escape from natural enemies; and sanctuary from the most proficient predator ever known, man.

With drainage, these natural wetland areas undergo many changes—some immediately, others more slowly. Wood duck usage for the production of young is practically eliminated; winter feeding areas for wood ducks, mallards, and black ducks disappear with the elimination of surface water; deer are subjected to greater loss from predatory dogs by lack of water through which to escape.

With drainage, surface water is usually eliminated and the water table drops considerably below the surface. Such immediate change in water levels can result in top-kill of existing timber stands; brushy understory plants increase at a rapid rate; and cypress-tupelo and other water-tolerant species are slowly replaced by drier-land timber types. Vehicular access and human disturbance follow to despoil the wildlife sanctuary that once existed.

This bunch of mallards has found food and sanctuary in a hardwood swamp. Areas of this type are of multiple use to wildlife: they provide food, water, resting spots, as well as protection.
Luther Partin



Luther Partin

Cypress swamps like this make dollars and sense. It's a wise landowner that will reconsider draining wetlands. Timber production, water conservation, and wildlife should be considered.

But of what value to a landowner is such wildlife and hardwood timber? Recent interviews with landowners who live near the Uwharrie Wildlife Management Area in Montgomery County indicate that on several occasions in recent years, farmers have received more money from the deer hunting rights on their property than from the combined total of all farm crops. Some of these individuals leased hunting rights on an annual basis. Others sold daily hunting permits for $3. Two such landowners received sums of $450 and $1,053 using the daily permit system. Canada goose hunting leases and daily hunting fees constitute a source of substantial income to landowners in the Lake Mattamuskeet and Ansonville areas.

These are mere previews of the income-producing potential from wildlife resources. The immediate future will witness much greater demands for all types of outdoor recreation, and with this increased demand will come opportunities for individual landowners or groups of landowners to supplement their regular income from recreational use-fees received from a public which is already willing to pay for these opportunities. Much of this recreational demand will take the form of hunting and fishing. To illustrate the recent growth in hunting effort, in 1954-55 North Carolina hunting license holders made 4,984,630 hunting trips; in 1962-63, this increased to 6,110,427—a 23 percent increase in a nine-year period.

Timber scientists of the United States Forest Service have found that hardwood wetlands can be managed to produce high-quality timber. Growth rates on good sites with ample water average over 500 board feet per acre per year and sometimes exceed 1000 board feet. When sold for $35 per 1000 board feet, a net income of $35 per acre per year can be realized. This rate of income compares favorably with many agricultural crops.

For example, the following values of average annual net income per acre have been calculated from production and income statistics published by the U. S. Department of Agriculture and the North Carolina Cooperative Crop Reporting Service: corn—$17.63; wheat—$15.86; cotton—$31.44; tobacco—$499.13 and soybeans—$35.24.

Most of the state is already producing pine timber. Most of the large pulp and timber companies are approaching the point when most of their needs could be fulfilled by pine production from their own lands. Many new acres of pine have been planted under the reforestation programs administered by the Agricultural Stabilization and Conservation Service. New building materials such as aluminum and plastic are rapidly being substituted for lumber in the construction business. High quality lumber is currently being shipped here from the west coast. These trends will tend to decrease future demands and prices for southern yellow pine.

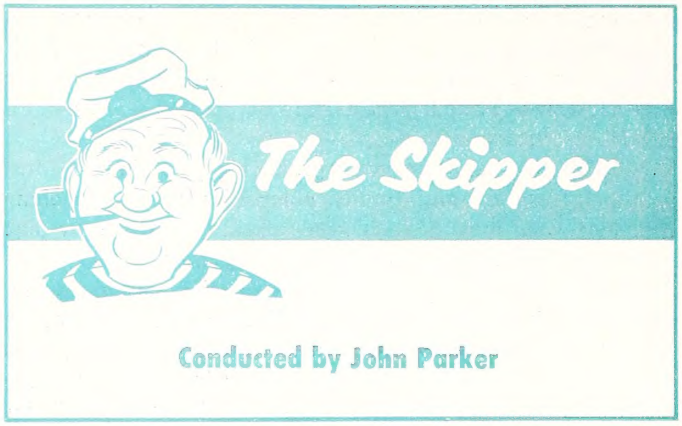
There is no indication, however, that the future demand for high quality veneer and hardwood lumber will decrease. On the contrary, it should increase significantly in both demand and price. Two-thirds of all of the hardwood produced in the United States comes from the southeastern states. North Carolina now is the leading state in the nation in the manufacture of wooden furniture and hardwood veneer and plywood. These industries continue to grow and with this growth the demand for hardwoods will increase. The veneer and hardwood lumber required to meet these demands are produced, in large part, in the bottomlands and swamps in the Coastal Plains Region, on the same sites that are now being drained. In view of these findings it would seem that landowners would desire to intensify management for hardwood production rather than to allow any practice that would damage this valuable resource.

The objective of drainage for agricultural production is to remove excess water from cropland and pasture. It is felt that removal of excess surface water does not, of necessity, have to include the drainage of hardwood bottomlands and swamps. At present, the details of this problem are yet to be resolved. Nevertheless, a solution must be found and the results applied to field operations if due consideration is to be given all of the natural resources affected by the watershed program. These resources include not only soil, and water, but forests, and wildlife as well.

It is felt that solutions can be found and applied for each watershed program. This will require more intensive planning surveys, and final engineering designs modified to accommodate these other resources. We are confident that the highly competent hydrology engineers of the Soil Conservation Service can solve these problems with little or no extra cost to the sponsors or taxpayers if they are asked to do it.

The public funds made available under the PL 566 watershed program are provided for surveys, planning and execution of "works of improvement." It would be most unfortunate if these "works of improvement", financed as they are with public funds, were to result in the systematic destruction of two of North Carolina's important natural resources. We would like to think that wherever this potential exists, the sponsoring agency, the individual landowner, the Soil Conservation Service and all other interested and cooperating agencies will insist on a plan that will insure the conservation of **all** natural resources in the watershed area.

It is our firm belief, and figures at hand substantiate this belief, that such an approach is not only in the best public interest but also to the financial advantage of the individual landowner.



THERE are times when the outdoorsman finds it interesting and exciting to set out on a new pastime without help, prior training or fine equipment. For example, a new member to the order of fishermen may decide to put some fish on the table without first studying the method that he will eventually use. So, he says to himself, "I don't need the help of my old buddy Expert Fisherman Joe Jones, all I need is a hook and line." Now if our fisherman is successful, he has turned the trick without soliciting help. He has pioneered, for himself at least, one of man's oldest pastimes.

But, if we put our new tackle-busting buddy in a boat, any boat, then the story should have a different beginning. That is, there should be some preparation, and the more the better is usually a good rule to follow.

In other words, failure to prepare yourself and your equipment could end in disaster. This is not to say that all careless and unskilled boaters are doomed. Quite the contrary, only a fraction of a percent of North Carolina boaters will have serious trouble this year. But think of the enjoyment that these few can have this season if they spend the time to become proficient in basic boating skills.

There is a certain amount of pleasure and a lot of security in knowing a little more about boating safety, rules and equipment than you may be called on to use. Don't burden yourself, however, with too many technicalities at first. Don't spend so much of the season in preparation that there is little time left for the doing. Start out slowly and gradually add to your training program, and remember that you have responsibility to yourself and to others to become a good and safe boater.

The new skipper can go about training himself and his "crew" in various ways. The seasoned skipper can use the same methods in polishing off his experience with the latest in information and technique. Let's discuss some of the main training categories.

Most of the training aids and materials discussed here will cost anywhere from nothing to the price of a few gallons of marine fuel. Much of the information is yours for the asking.

Probably one of the most pleasant ways of being exposed to the facts that every boater should know is by use of the motion picture. This method may seem to be more practical with groups or clubs, but remember, it takes only one person to borrow, show and enjoy the film. However, if you want company in viewing a boating film, it would be a simple matter to fill the family room or basement with boating enthusiasts from the neighborhood.

Films of this nature are presented by most of the outboard motor manufacturers and are loaned through their dealers to anyone interested. It is usually suggested that you apply for the film thirty days prior to the time that you would like to view it. Dealers do not stock these films but have to order them for you.

Other organizations that offer film service or can give you information on same are the Outboard Boating Club of America, the Red Cross, the Coast Guard and the Fish and Wildlife Service. Some boat, trailer, and sparkplug manufacturers have films produced for them and these are available through dealers. Your Wildlife Commission has films on boating and these are available to all with return postage being the only cost.

If the organizations mentioned do not handle the film directly they may suggest that you contact a commercial film library which usually charges a nominal fee. Of course, any film which you borrow should be treated with care. A twenty minute film, for example, may cost many hundreds of dollars to produce.

What about a projector? Try schools, churches and other community organizations for this necessary item.

While on this subject let's not overlook the possibilities in color slides. Slides are an excellent way to document your boating trip. You may, along with the family pictures, take some "how to" close ups. Those could be used later as refreshers.

Books and Booklets

Films are fun and educational but aside from having all needed information stored under your skipper's cap, there is probably nothing better than a good, up-to-date book on boating. Try your public library and you will no doubt find more than enough to keep you busy. After spending what you consider sufficient time on pure boating safety techniques you may then wish to switch over to different, but related subjects. Something on boat building, marine biology, weather, skin diving or a good old fashion sea story may be to your liking and will give you a different appreciation of the wonderful water medium.

"Piloting, Seamanship and Small Boat Handling" by Chapman is a title new to few boating enthusiasts. It is now available in the 1964 edition. This book is rated as being one of the best and most complete works under one cover. "Encyclopedia of Outboard Boating" by Bowman is another which comes highly recommended and includes "everything from the history of the sport to tuning up a racing engine." There are many, and the interesting thing about any good book is that it usually costs about the same as one good life preserver or less and can do an equally good job, if the facts within are properly applied. Of course, the life preserver should be bought first.

Booklets, the little brothers to books, are also extremely good because they are handy. And because they are condensed they're packed full of information. There is no information quite so good as available information and surely the booklet can be stored in the smallest of boats. Put one in your tackle box or tuck it under the boat seat and somewhere between a strike and a sandwich you may wish to check up on a particular technique or ruling.

One such booklet is "Outboard Boating Skills" published by the Evinrude Boating Foundation. It has been around for a few years and is especially good for the beginning boater. The Coast Guard's "Recreational Boating Guide,"

(CG-340) is another example of what the booklet can offer. It can be purchased for 40 cents from the Superintendent of Documents at the U. S. Government Printing Office, Washington, D. C. This publication also includes a listing of related material that is available.

The National Safe Boating Association, the organization that sponsors the National Safe Boating Week, also furnishes boating literature. "Boating Tips" is one of their publications. Even some paint companies get into this worthy act and furnish booklets on boat maintenance, especially refinishing. Several boating magazines plus boating columns in the outdoor magazines offer the latest in boating news each month. And, of course, don't forget to familiarize yourself with the "North Carolina Motorboat Owners Guide." This booklet covers boat registration and gives other boating tips.

Books, booklets and brochures are all too numerous to list and the above are mentioned as examples. A postcard to any of the boating, safety or governmental organizations requesting a list of their publications would be 4 cents well spent.

To view your favorite boating area on a detailed chart is most enlightening and is also just plain fun. Obviously it is a necessity to many boaters. Someone once said that the chart was to the boater or mariner as the road map is to the motorist.

Many marinas, sporting goods dealers, bookstores and printers carry charts. The price for one chart is usually a dollar. One chart will cover miles and miles of coast depending on the scale, and type. There are various types of charts but the outboarder will probably benefit most from harbor charts, small craft charts or inland waterway charts. Latest thing out is the new Small Craft Chart Folio. Several oil companies also provide cruising guides or charts and these, of course, point out their dealers serving the areas taken in by a particular chart.

For the man who does most of his boating on the inland rivers, creeks, and lakes the topographic map may be of some interest. These are anything but nautical but the large scale maps have good detail and can be quite useful on this type of water.

If the dealers cannot help you, write directly to the Coast and Geodetic Survey for topographic maps.

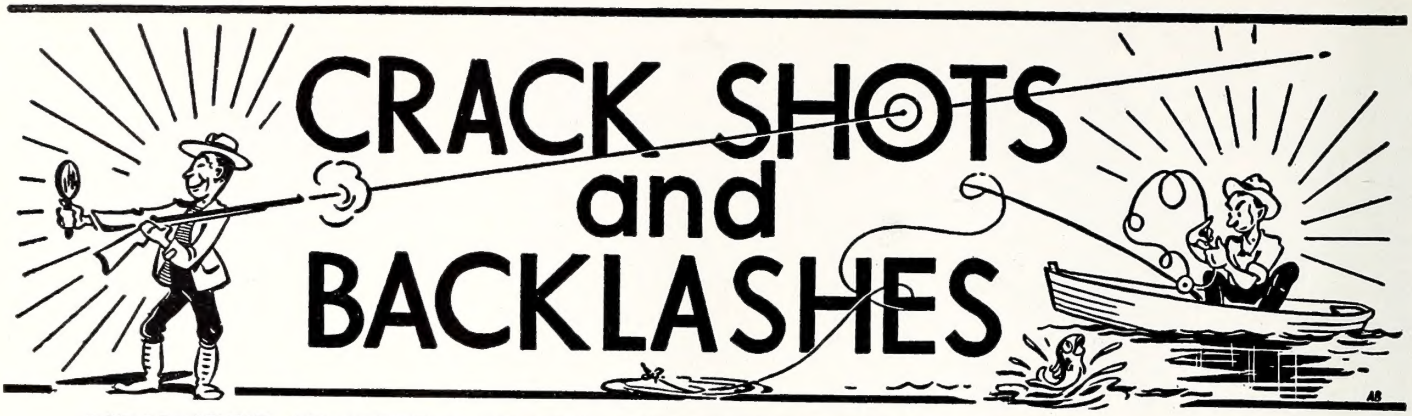
Instruction in boating is valuable for boaters at all stages of the game. Best known among the organizations that provide boating instruction for the general public are the American Red Cross, the United States Power Squadrons and the U. S. Coast Guard Auxiliary. This training may vary from one shot demonstrations to programs of many sessions. Advanced training is offered for those showing interest and ability. The best thing to do here is contact the local representatives and request information on class schedules.

Local boating clubs may also be contacted for information. After learning more about a club or organization, you may wish to join one. If so, you will have first hand information and training available at all times.

With only a small investment you can literally fill an ice chest with boating literature. This, however, should not be your goal. Obtain materials on basic boating, then gear the remainder of your program to fit the type of boating in which you will normally participate. Time permitting, you can expand on this and will find that the enjoyment is as unlimited as is the material describing it.

Observe Safe Boating Week and if you are a year 'round boater why not observe 51 additional weeks of safe boating.

National Safe Boating Week—June 28-July 4



DEPARTMENT OF LETTERS TO THE EDITORS, FIELD NOTES, AND ITEMS OF INTEREST

Conducted By Rod Amundson

I hate to sound like an oldtimer, but I can look back on almost 30 years of experience in wildlife conservation work including college. Over this period of time I have seen some radical changes in wildlife conservation practices.

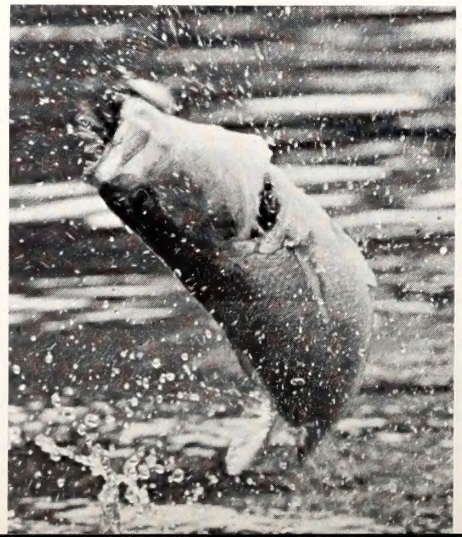
Back in college days sportsmen throughout the country were thoroughly convinced that the cure-all for poor fishing was to dump more fish into the water. These, of course, came from state and federal hatcheries. When I was a kid we were taught to wet our hands and carefully remove small fish from the hook and place them gently back in the water to grow up. There were statewide open and closed seasons on game fish of all kinds, just as there still is on upland and migratory game species. Creel and minimum size limits were imposed on all game fish. These were rather strictly adhered to, and anyone who took more than the allotted size or amount, or caught a bass before the season opened had his ancestry seriously questioned.

During the same period of time nearly all hunters and most conservationists were convinced that the best way to get good hunting was to raise game in state-owned game farms and turn them loose to fend for themselves. Naturally most of this game fell prey to predators, and brought around the rather expensive fad of paying bounties on such varments as mountain lions, wild cats, foxes, coyotes, wolves and even crows. Some states paid for feet, others for tails, and still others for scalps or skulls. Smart operators made a good thing out of this by collecting double or triple bounty, and the poor misguided sportsman footed the bill.

In some western states, such as Idaho, coyotes were pretty well cleared out. The ranchers were happy about the security of their lambs and calves and colts—until the jackrabbit population just plain exploded. Rabbits got so plentiful they destroyed crops and literally toppled over alfalfa hay stacks. Things got back to normal once folks realized that despite the loss of an occasional head of livestock, coyotes were handy things to have around.

But times have changed since the "good old days" that never were very good, when you stop to think about it. We all like to cuss the federal government and the congressional habit of throwing billions of dollars around. If you are a hunter or a fisherman, the best tax dollar you ever paid was the ten percent excise tax on your guns, ammunition and fishing tackle.

Under the Pittman-Robertson and Dingell-Johnson acts, this tax money is allocated back to the states for use in producing better hunting and fishing. Back in my college days egg heads had not been invented yet, but a few far-seeing intellectuals saw the need for scientific research to get much-needed information on the habits of game and fish. As a result of this research, state-owned game farms became as obsolete as whalebone corsets. It was proven that predators play an important and valuable role in the balance of nature by keeping pests under control and making sure that only the fittest (and therefore the best) individual game species survive.



Research proved that except for trout streams, it is impossible to over-fish the average body of water with hook and line; it showed that creel and minimum size limits are unnecessary in utilizing most species of fish, and that poor fishing in farm ponds is usually the result of too many, not too few fish. Although it took years for the idea to catch on, research showed that a year-around fishing season is okay for everything but mountain trout.

The Dingell-Johnson and Pittman-Robertson programs are far from lopsided. A large portion of the funds from these acts goes for habitat restoration for game, and stream and lake rehabilitation for fish.

Proof that all of this has paid off lies in the fact that more people go hunting and fishing than ever before, and are taking more game and fish than ever before. With the exercise of common sense and an agreeable relationship between sportsmen and conservationists, the good old days we are living in now can go on forever!

"Mountain Scene"

DEAR SIRS: Please tell me where the scene is located that is on the inside cover of the November 1963 Wildlife, by Jack Dermid. It sure is a restful scene and gives one a pause to wonder and ponder about the hectic, busy, industrial life many of us find ourselves in today.

Would like to say briefly, here, that I look forward to a little bit of "down home in North Carolina" each month when Wildlife comes. Keep it up, it's fine. C. A. WIGGINS, JR., DUNBAR, W. VA.

All we know is that it (the picture) was filed under "Habitat, Mountain Scenery."—Ed.

No Help

DEAR SIRS: I would like to obtain some information about deer and tobacco. I have heard all of my life that deer love to eat tobacco. Old timers have said that before they hunt they always rub tobacco on themselves to attract the deer and take away the human odor.

I was wondering if you would have any evidence of this in the form of pictures or articles. I would appreciate any information you could funish me on this subject. J. A. JAMES, HOUSTON, TEXAS

Next Question

DEAR SIRS: Have you ever had any experience in getting water moccasins out of an attic?

The writer has a home on salt water and for the last several years has experienced evidence that snakes are hibernating in the fiberglass insulation in the attic. We have never experienced the actual sight of the snakes; however, the sheds are very evident and they are water moccasins. Any suggestion on your part in how to get rid of these reptiles will be appreciated. P. A. NEWBERRY, CHARLOTTE

We have experienced hip waders in the basement, but never water moccasins in the attic. Seriously, your local exterminator should be able to solve the problem. You might try burning sulphur candles in the attic at frequent intervals during the fall when the reptiles come in to hibernate. These have been used successfully to drive squirrels, bats, and mice out of attics.—Ed.

It Works!

DEAR SIRS: I would like to give you some information on my bi-color lespedeza quail feed on my farm in Lenoir County.

I have about twenty patches of it planted for my birds and up until the first of the year they paid no attention to it, but now they have taken over all of it.

The fields have been plowed up and most of the natural feed destroyed.

Field borders of this type attract quail. Plant in spring where you hunt in fall.

One day last week four of us went over to hunt a little and check on my bi-color. In five hours of hunting we found fifteen coveys of birds. My bi-color was drawing birds from over a mile away.

We found two coveys in one patch of feed. I have never seen anything attract quail as it does.

I hope I have enough seed left to carry my birds until spring.

I believe each covey we found the other day would have averaged twelve birds. That is too many birds to carry over. We find the hunting rough and undergrowth very thick.

I can tell when there is a strange covey near a patch of my bi-color. The birds are much wilder than those that are raised near the food and will not stick for the dogs. I guess they are in a new area and are very scared. They surely are rambling now looking for food.

This hunt was unusual as most of the time we find five or six coveys on a hunt.

I surely recommend your prorgam for quail on farm lands in North Carolina. F. R. HODGES, MOUNT OLIVE

Turkey Talk

DEAR SIRS:

The January issue of Wildlife in North Carolina carries an article by George Burdick, wildlife biologist, in which Mr. Burdick sets forth the case for spring gobbler hunting. I read this article with interest since it carries a picture of me and my friend, Tom Coleman of Rocky Mount, holding a fine gobbler. Now, I am sure that neither you nor Mr. Burdick meant the appearance of the picture with the article to indicate that Tom Coleman and I agree with the spring season propaganda that is the subject of the article; but some of my turkey hunter friends have received this impression, and to set the record straight, I will appreciate it if you will publish this in a later issue of Wildlife in North Carolina.

The above came from Mr. Frank Harper, Raleigh insurance man and well-known sportsman. Mr. Harper's letter went on to give many reasons why he is opposed to a spring gobbler season, most of them similar to those advanced by Parker Wheedon, Charlotte, in an article appearing in the April issue of *Wildlife*.

We regret that Mr. Harper has been considered as in favor of a spring gobbler season; he strongly opposes it. The picture was taken several years ago and was used only because it was a good picture. —Ed.

Lucky Dog?

DEAR SIRS: Reading "Crackshots and Backlashes" always brings enjoyment to a sportsman. During the past quail season I had an experience that I shall never forget, and would like to share it with your readers.

I am a great lover of outdoor sports, especially quail hunting. A friend and I were hunting a certain spot in Mecklenburg County when my favorite setter, Crocket, pointed a covey of quail. When the quail were flushed most of them went to my right, I shot three times and was picking out a bird each time I shot. When my dog had completed his retrieving he had brought me eight quail. I knew I was killing several each time I shot; but didn't realize that I had killed eight quail on the covey rise.

As there is great competition between us when we are hunting, my friend said he would never have believed this if he had not seen it with his own eyes.

I would like to hear any comments as I am curious to know whether anyone else has been as lucky as I was that day. GLENN W. STEWARD, MOORESVILLE

No Pipe Dream

DEAR SIRS: You probably will not believe this; however, 'tis true and my neighbors will verify it.

My TV antenna is attached to a ¾ inch pipe, strapped to the chimney on top of the house. The pipe lacks about four inches coming down to the roof. Last winter a redheaded woodpecker carried pecans from a neighbor's tree and dropped them in the top of the antenna pipe. The pecans would go down the pipe, drop on the roof and fall to the ground. I picked up 246 pecans that he dropped down the pipe during a two-week period. Christmas morning we were watching him and he came down on the roof and looked up the pipe. Guess he was wondering why the pipe never filled.

I did not know a woodpecker stored nuts for the winter, do they as a rule? HARRY L. WARD, GATESVILLE

Back Lash

DEAR SIRS: I noticed in Joel Arrington's article on animal eyes in your April issue of Wildlife, page 6, that the statement is made, "The vertical, elliptical pupil of the copperhead is the typical shape for poisonous snakes. Harmless snakes have round pupils."

Is this completely correct? Isn't it pit vipers that have elliptical pupils? Does not the coral snake, which if I am not mistaken ranges nearly as far north as southeastern North Carolina, have round pupils?

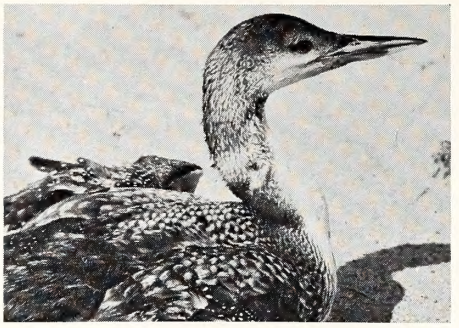
I don't want to quibble, but if the statement is wrong, it might be dangerously misleading. P. WILLIAMS, DURHAM

Thank you for pointing this out. Elliptical pupils are characteristic of the pit vipers. Coral snakes, cobras, etc., do not have such pupil shape.—Ed.

Pegasus?

DEAR SIRS: The other day I was talking to a man who asked me if I had ever heard of a bird named the "flying Colt." I had not, and upon further questioning, he told me that he had heard them going north in the early spring, flying high, and their call had the sound of a young colt braying. He said, "if you were ploughing a mare and she heard these large birds going over, calling to each other, the mare would become nervous, and show all the symptoms of a mare who had a colt back at the barn."

Can you help us identify this strange migratory fowl? J. C. DOWNING, FAYETTEVILLE



The critter in question could be the loon. The one pictured here is molting and does not show normal black and white pattern.

We can't be of much help without seeing or hearing the bird. Could be one of the herons or bitterns, or possibly loons.—Ed.

To Whom It May Concern . . .

DEAR SIRS: I have to dictate this letter because I am an amputee. I am a blue heron, and my wing has had to be amputated because of a cruel hunter.

Will you advise me? What can I do now? I am sure, like human amputees, I could be useful in some way, perhaps you could find me a pleasant lake where I could keep down the minnows for you.

Professor Unthank, of the Biology Department, (Campbell College) is caring for me at present, and Dr. Kittrell of Dunn took off my poor shattered wing.

I can never fly again, nor can I migrate with my relations, it will be hard for a free, brave spirit to be so confined.

Please help me, I know you are good to birds. HENRY the HERON

Bluebird Slump?

DEAR SIRS: Being a bird lover, naturally I'm concerned about the decline in the bluebird population.

A few winters ago we saw as high as 6-8 pairs crowding one bird feeder; now we are lucky to see three or four birds.

We built birdhouses according to Wildlife magazine specifications. The first one or two years bluebirds built in them but then English sparrows crowded them out. (another reader's complaint too, I notice). Is there any preferable place to hang the houses? We plan to put up four houses right away.

Our backyard in winter is truly a bird sanctuary. We see everything from purple grackles to ruby-crowned kinglets, humming birds too, but not in winter. We feed them everything, cracked grain, corn, sunflower seed, and the prepared suet food from Wildlife magazine recipe. The bluebirds come so seldom I do not know their preference.

Do you have any other suggestions to attract birds. We have seen as high as 30 or 40 Cardinals but I've never seen any evidence of them nesting nearby. SUSAN H. EKERSON, TROY

Cardinals conceal their nests well in dense shrubbery.—Ed.

Stranger

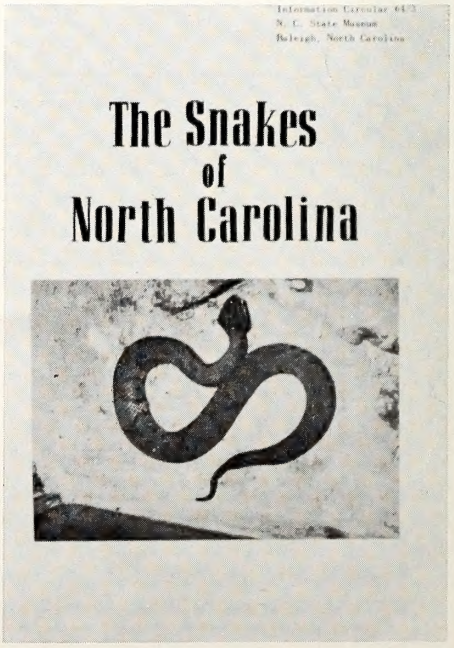
DEAR SIRS: I am a subscriber and read your fine magazine with much pleasure. Since I am a former "Yankee," your magazine has helped me to enjoy fishing and hunting in North Carolina more fully.

I hope your staff can answer this question: The other day I visited a friend on Myrtle Grove Sound near Carolina Beach. His home overlooks the Intracoastal Waterway, which teems with bird life. We observed one group of ducks which consisted of five birds, two mallard drakes, two mallard hens, and one hen-sized, all white duck. The latter had an orange bill. Please tell me what kind of duck did we see with the four mallards? We guessed at something on the order of an albino or maybe a converted domestic. Please help us. Thank you, MICHAEL JOSEPH SAWS, WILMINGTON

If the bird in question can fly with the others it is likely to be an albino female mallard.—Ed.

DEAR SIRS: In reading through the March issue I noticed one error on page 4. The Plymouth Colony could hardly have had a conservation law in 1603 when it was not established until 1620. New Englanders are bad enough about wrongly claiming to have had the first permanent colony, without giving them this sort of help. DR. ROBERT S. POOL, WINSTON-SALEM

The error was ours, not the Pilgrims'. The date should read "1623."—Ed.



For this list of the snakes of North Carolina, send 10 cents to the State Museum of Natural History, Raleigh, N. C.

Book Review

"As the mallard goes, so goes American waterfowling" says John Madson, noted conservation writer for the Conservation Department of the Olin Mathieson Chemical Corporation. The mallard is king in the Mississippi flyway and common in others with about 16 percent of North Carolina's annual duck harvest being the greenhead. This great bird has given us priceless pleasure and has taken much in the way of greed from man.

Madson points out in his booklet, **The Mallard,** that although we have killed him by the tens of thousands in the days of market hunting, have destroyed and still are draining much of his nesting grounds, he is still with us. This duck is the weather vane of waterfowling and is perhaps the first and in many cases the only duck accurately identified by many hunters. To most, duck hunting means mallard hunting.

The green head of the mallard drake is not really green? That's right, and Madson tells us why it only looks that way. If you have any curiosity you will no doubt check this out when the first of next season's mallards drop among the decoys. I wonder, however, if you would go so far as to check out the 12,000 feather count that the author mentions. Good luck!

Non-stop air travel is relatively new to man but ducks have been doing this for some time now. Not that they always do this, but mallards can and have been known to make their 2,000 mile flight south in 35 hours non-stop. Speaking of mallards in flight, here is one of those tall tales that modern photography has proven to be true. Yep, the old greenhead can fly upside down and has even been photographed doing an inside loop. However, the head, says Madson is always upright for in this way the duck maintains its sense of balance.

Except for pellets that bring your bird down, most hunters never see any of the lead that they spray over the marsh. But a significant percentage of the mallard population comes into very close contact with some of that lead again. According to author Madson, about two or three percent of the mallard population dies each year due to lead poisoning. The mallards pick up the spent shot in their shallow water feeding. To correct this situation before it becomes a greater problem, Olin is working on a non-toxic shot.

If you want to learn more about the mallard, what he is like, what man has done to his vital nesting area, how man has helped him with refuges or how to hunt him, then we suggest that you read **The Mallard.** It is available from the Conservation Department of the Olin Mathieson Chemical Corporation, East Alton, Illinois for $1. **John Parker**

If this photo makes you want to go fishing, it has served its purpose. Generally June weather is pretty even-tempered, and the water is still on the moderate side. Later, fish will drift down to summertime depths where they may be out of reach.

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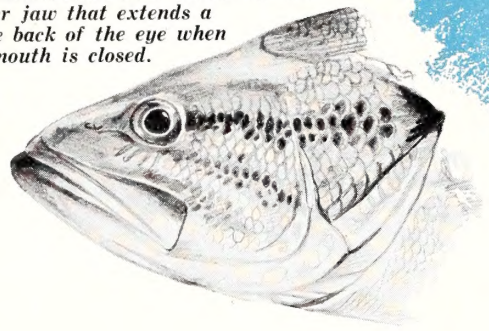
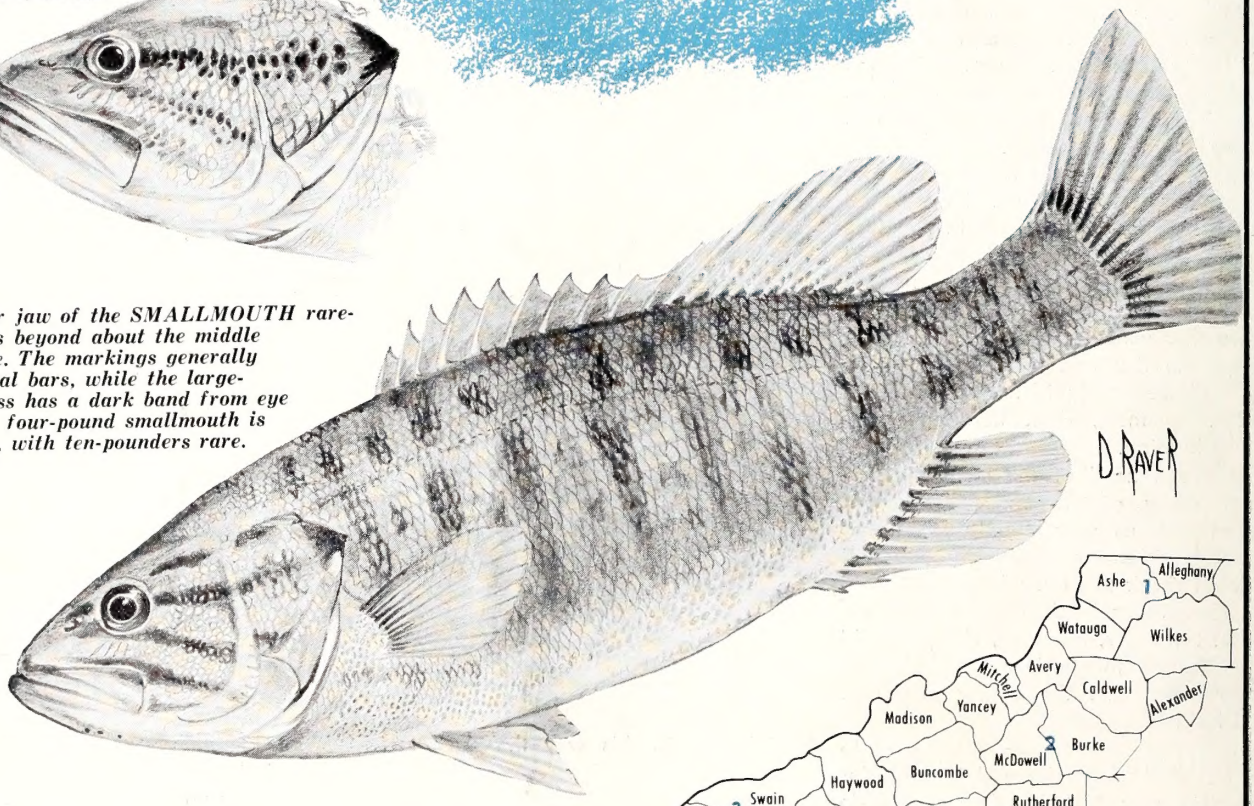
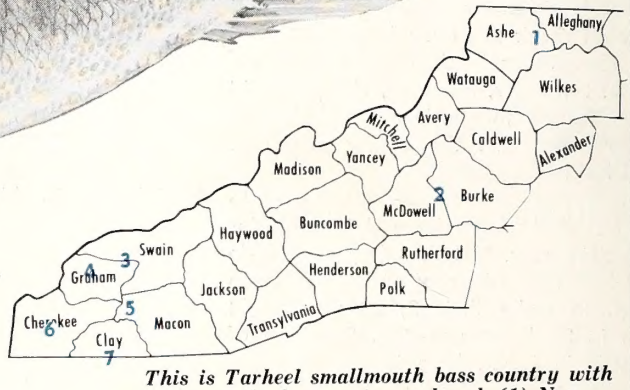
Smallmouth Bass

The LARGEMOUTH BASS has an upper jaw that extends a little back of the eye when its mouth is closed.



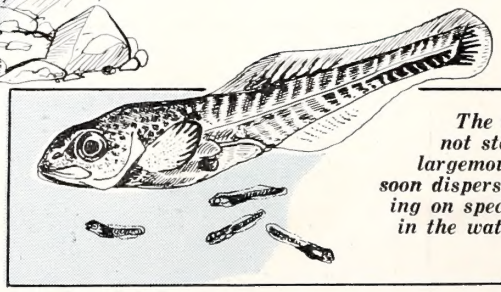
The upper jaw of the SMALLMOUTH rarely extends beyond about the middle of the eye. The markings generally are vertical bars, while the largemouth bass has a dark band from eye to tail. A four-pound smallmouth is a big one, with ten-pounders rare.





This is Tarheel smallmouth bass country with a few of the best spots numbered. (1) New River, (2) Lake James, (3) Fontana Reservoir, (4) Santeetlah Reservoir, (5) Nantahala Reservoir, (6) Hiwassee Lake, (7) Chatuge Lake.

Coarse sand or gravel is generally required by the smallmouth before it will spawn. The eggs stick to the clean stones and the nest is protected by the male for several days. Spawning takes place when the water temperature reaches about 65°. The gravel is fanned clean where the water is from 3 to 6 feet deep.



The tiny black fry do not stay in schools like largemouth bass do. They soon disperse and begin feeding on specks of animal life in the water. A diet of fish will soon follow.

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Wildlife in north carolina

ten cents

july 1964

Joel Arrington

"What Good is it?"

This is a praying mantis. It isn't a very p r e t t y critter and you may have asked yourself, "What good is it?" Like a lot of other individuals in the world of Nature, it has a job, and an important one: it is an exceptionally useful destroyer of other insects, and should be protected.

Wildlife in north carolina

The official publication of the NORTH CAROLINA WILDLIFE RESOURCES COMMISSION, Raleigh. A monthly magazine devoted to the protection and restoration of our wildlife resources and to the improvement of hunting and fishing in North Carolina.

State of North Carolina

TERRY SANFORD
Governor

North Carolina Wildlife Resources Commission

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COVER

If you've been fishing, you've no doubt seen the belted kingfisher doing a bit of angling too. He rarely misses but seldom does any damage to fish populations. It is the female with the chestnut markings on the lower sides, featured on our cover this month. In the bank in the background is the entrance to the nesting burrow where six or seven white eggs may have been laid late last spring. Say, is that your bass plug? Painting by John Taylor.

WILDLIFE IN NORTH CAROLINA recognizes the need for close cooperation between State and Federal conservation agencies and the people who hunt and fish—to bring about a restoration of our renewable resources. The Editor gratefully receives for publication news items, articles, and photographs dealing with the North Carolina out-of-doors, but reserves the right to reject materials submitted. Full credit is given for all materials published.

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Part 1 - Mountains

Where to Fish

by Duane Raver

EVERY day of the year, fish bite somewhere in North Carolina. The trick, of course, is to be in the right place at the right time—with the right bait. It would take a fair-sized book to list and describe all of the fishing spots available in the Tarheel state, and even then it would be unlikely that the list would suit everybody.

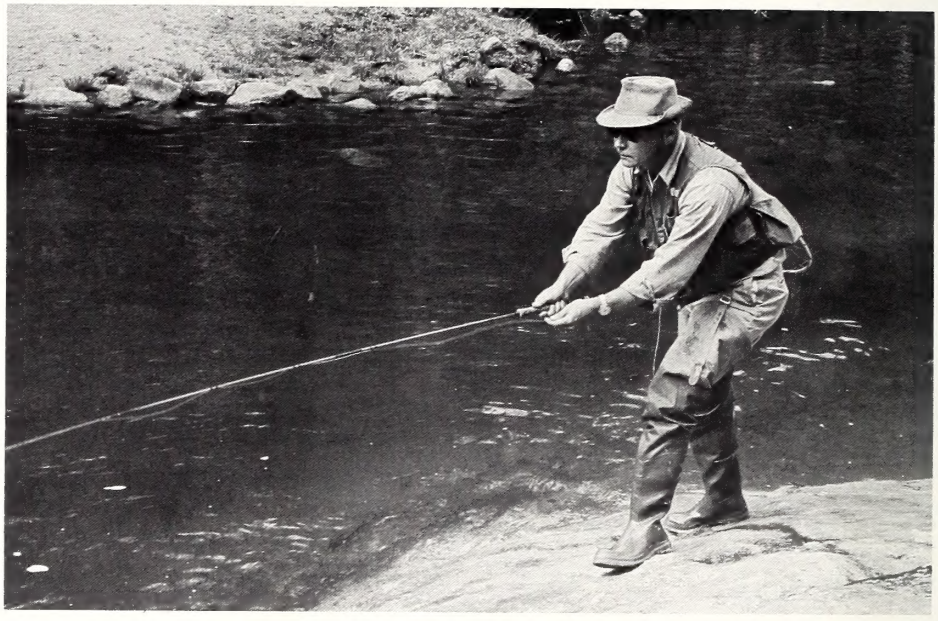
Such a list would soon be out of date because of the various changes that take place almost annually in fish populations, access, water conditions and such. But as a start, we are going to attempt to put the finger on what are generally considered to be some of the best fishing waters from the Blue Ridge and Smokies to the brackish sounds of the coast. In this issue we will look at the mountain possibilities.

With roughly 2,000 miles of trout streams open to public fishing, it may be best to generalize here rather than specifically select "the best." Most trout anglers who have fished streams both inside and outside of the Wildlife Commission's wildlife management areas usually agree that more consistent results come from management area waters. For the "first-time" trout fishermen, we would have to recommend such streams. Special regulations on these areas include fishing on Wednesdays and Saturdays and Sundays only, thus trips should be arranged accordingly.

A fee of $1 per day is charged for fishing on western management areas. For all designated mountain trout waters (in or out of the management areas) a special trout fishing license is required in addition to a regular fishing license.

The Wildlife Commission manages these areas cooperatively with the U. S. Forest Service, U. S. Fish and Wildlife Service and the National Park Service. The regulations governing fishing are prepared by these agencies and printed in a booklet each year which is available free of charge from the Wildlife Commission in Raleigh. This is the first step for the angler who has never tried his luck in these localities.

Quite a wide range of trout fishing possibilities are available in North Carolina. Some streams can be fished practically from your car, while others are accessible only by rough foot trails and miles of walking. Most streams are small and easily waded, while some are wide and wild, making wading impossible. Trout are stocked several times each year in most, but several receive no stocking at all yet have fine populations of native trout—some larger than five pounds each.



Trout fishing? Plenty of it, but it takes skill to fool the big ones consistently.

Each year, the Wildlife Commission revises the list of Designated Mountain Trout Waters. This list includes, by county, the streams open to public fishing, the number of miles so designated, and the limits of the public fishing stretch. Each of these streams is stocked annually and most furnish good fishing.

Generally speaking, the less accessible streams have the best fishing and less fishing pressure. On some, you may not see another fisherman all day. But it takes real work to get to them, and whether it's worth it is up to you.

It is difficult to pass up this brief discussion on trout streams without getting specific, so we will simply mention a few streams that have produced well in the past: Nantahala River, both in Standing Indian Refuge, and the open portions above and below Nantahala Reservoir. Fires Creek, Davidson River, Three Top Creek, Cane Creek (Mitchell County), Linville River, Harper Creek, Big Snowbird Creek, Chatooga River, Horsepasture River, Slick Rock Creek, Hazel Creek, and on and on. Your favorite isn't here?

If you prefer trying for your trout in still water, several good lakes dot the mountain landscape. All are designated trout water and the trout license is required. Sparta Mill Pond always produces well in the early part of the season, but most of the trout taken are fresh from the hatchery. Price Lake and Trout Lake, down the Parkway from Boone, have plenty of fish. Cheoah, just below Fontana is loaded with trout, and some big ones. Tennessee Creek, Wolf Creek, and Bear Creek Lakes, all on the East Fork of the Tuckaseigee River have fair to sometimes excellent trout fishing.

Nantahala Reservoir is perhaps the most outstanding trout lake in the state, although it can be a difficult one to solve. We'll take a closer look at it in a moment.

Although trout fishing methods vary a great deal from place to place and even from hour to hour, we can hit the high spots of the generally-accepted methods. Most of the Tarheel trout streams are small—less than 20 feet wide—and many are overgrown with laurel, rhododrendron, willows, and other assorted brush. This presents the fly fisherman with all sorts of casting problems to say the least. It helps to come equipped with the shortest flyrod available and a lot of patience.

Flip casts, short roll casts and such are about the only hope on some creeks. The short spinning rod is deadly on many small trout streams, but make sure the lures that you use are permitted.

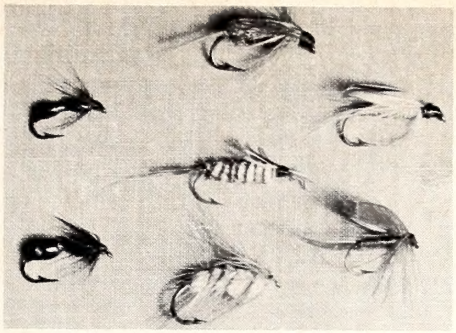
Although you will hook a great many small trout with bait, it still is one of the surest ways of catching fish. But bear in mind this factor of killing most of the trout so hooked. When flies and such simply won't come through though, thread a fishworm on a number 6 or 8 hook, pinch a tiny split shot 18 inches up from the hook and toss it into the white water at the head of a pool. Set the hook at the slightest indication of a bite. You will be pleasantly surprised at how few trout you lose using hooks with the barbs filed off or bent down, and this is one way of preventing needless killing of small fish.

For more sport and sometimes as many if not more trout, flies of various kinds are the ticket. The dry fly can be alarmingly easy to use and fantastically deadly or it can be the height of frustration. To describe its use is all but futile, so let's let it go with this: use a dry fly that you can see (the Wulff Royal is an example), cast it upstream (preferably with short casts), and don't let the line "drag" across the stream. You may find that several floats over a spot are necessary to arouse the trout, or he may flash up for it on the first one. Normally he will hook himself. Let him run unless he heads for trouble.

Although early evening seems best for the dry fly, you may find good hatches with heavy feeding at high noon. At times, you may have to match the hatch with utmost precision; at other times, most anything that floats works. Needless to say, a line that floats high is imperative. A light leader will help present the fly in a life-like manner, but one that is too long causes all sorts of casting problems. A 10 footer is fine—if you can handle it. A 7-foot leader tapered to 3- or 4-pound test will operate better.

Since the fish takes the dry fly with an unmistakable wallop, there is no doubt about it. With a wet fly, it can be a different matter. A life-like wet fly or nymph presentation consists of making it act like it is detached from the leader, sort of bouncing downstream. This means that when a trout sucks it on a slack line, you may miss the strike unless you can somehow detect the activity. Watch the tip of the floating line where it is attached to the leader and use it sort of as a bobber is used in bait fishing. The tiniest of unusual movement here should cause you to strike and try to set the hook.

The list of suitable flies and nymphs for this sort of trout fishing is yards long, so you can't hope to carry all the patterns that have been proven effective. For a start, stick to the wooly worm type of wet fly, and a couple of nymph patterns on the order of those in the photo above. It is difficult to say exactly what these bits of hair and feathers represent, but leave that to the trout.



Good wet flies sink. Either they are tied on fairly heavy hooks, or they are weighted with lead wire under the body wrappings. But unless they sink with very little hesitation, get some that do.

Almost all trout—particularly large ones—feed on minnows that normally are found in trout streams. Streamers of various patterns look like minnows and can be excellent for rainbows and browns. Actually streamers are about as easily fished as any artificial flyrod lure. Action generally should be erratic and thus the retrieve can be just about any way you happen to pull it. Rainbows often swat the streamer just as it reaches its sweep downstream and is started back. This is a good spot to be ready for a strike. Don't pass up the white, fast water for streamers; trout often remain motionless waiting for food in even swift stretches. In these situations they may not really have time to look over the offering and are more likely to make mistakes —in your favor.

Spinners and flyrods don't mix too well. You will find that they are a bit cumbersome to cast and in fast water, put a little strain on a light rod.

This is a mighty sketchy summary of trout fishing in streams and obviously doesn't scratch the surface. But it is a start for those who want to get their feet wet in trout streams for the first time.

We mentioned that the trout fishing in the smaller ponds of the west is by far the best in the early part of the season. Most of them are heavily stocked with 9- to 12-inch fish just prior to opening day and the pressure is great for the first week or so. In most cases you might find the fishing disappointing after the middle of May in these small trout ponds.

The large reservoirs of the higher altitudes provide some of the best—and some of the worst—fishing in the state. This paradox comes about because of the very nature of the impoundments. For one thing, they are vast expanses of water that present real problems for those not familiar with the places fish hang out. Then the fishing is often quite seasonal. From early April until about the first of June or so, fishing is generally excellent. But summertime catches—those during daylight hours—are none too good at best. Thus the poorer fishing (with a couple of exceptions) coincides with the vacation peak and some anglers go away a bit disillusioned.

Yet the fish populations in almost all the mountain lakes are quite good and in many cases fantastic. A wide selection of species is available: largemouth and smallmouth bass, walleyes, white bass, crappies, catfish, bluegills, and other sunfish, and in one case, muskellunge.

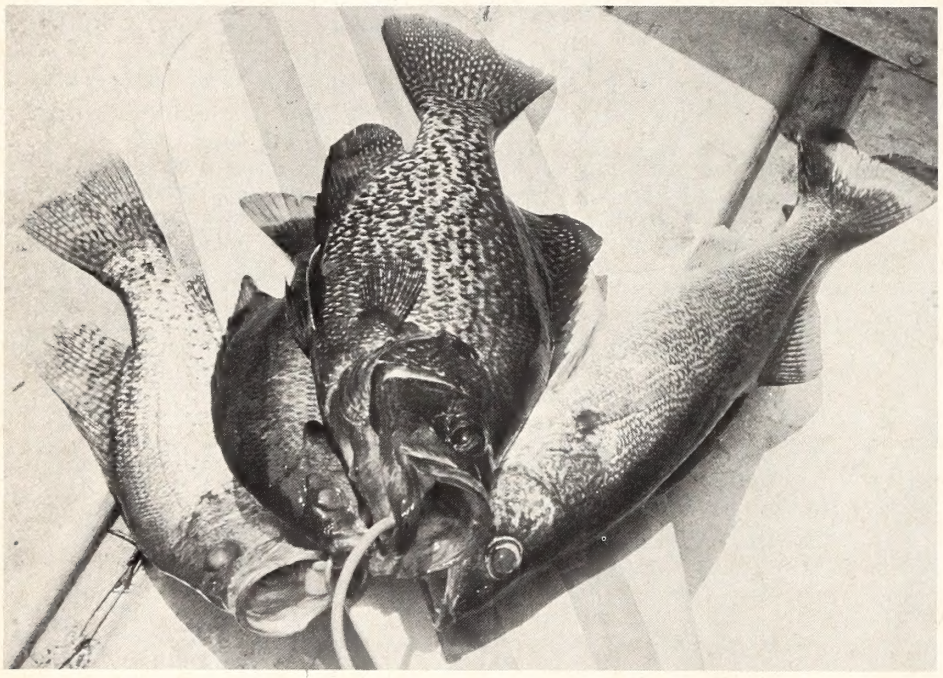
To get down to specifics on "where and how", let's mention a few of the top mountain reservoirs, not necessarily in order of best fishing. Santeetlah, Fontana, Hiwassee, Nantahala, Cheoah, Chatuge, Lake Lure, Appalachia, and Glenville. Although most of these are similar in fish populations, water conditions, etc., each may have its own formula as far as successful fishing is concerned. Speaking generally then, hit these lakes early in the year or during the fall (September 15-November 1), go prepared for varied fishing, and do your best to "learn" the water. Tackle that you will find helpful includes all three basic types: fly, spinning and bait casting. Bring your boat if you have one that trails well; but remember, these are real mountains that you will be traveling, and although the roads are good, going can be slow pulling a trailer. A medium-sized outboard is easier to carry, and boats generally are available on the spot.

Looking at a few of the more popular spots with a brief summary of each situation, let's start with Santeetlah. Best times: spring, late April, to the first part of June. Best times of day: dawn to 10 a.m.; 3 p.m. until dark. Can be good at night. Fish most likely to be caught: smallmouth bass, largemouth bass, walleyes, channel catfish, panfish, few trout. Productive methods: underwater plugs cast toward the bank, retrieved at depths of 3- to 6-feet, and surface lures near the rocky shoreline in early morning, and late afternoon. **Deep** trolling with spoons and spinners for trout. Bass bugs good early and late. Bait: nightcrawlers.

Rental boats are available at Cheoah Boat Dock on Santeetlah (a small camp ground is located here), and Thunderbird Mountain boat dock operated in conjunction with Thunderbird Mountain Resort. These boat docks are just off U. S. 129, about midway of the lake. Motel accommodations are located both on lake shore and nearby.

Fontana is a prime vacation spot because of the activities provided for the whole family at Fontana Village. The fishing is somewhat seasonal. Best times: Late March through mid-June; October. Best times of day: dawn to 10 a.m.; 4

p.m. right through the night. Summer angling can be very good at night. Fish most likely to be caught: largemouth and smallmouth bass, white bass, crappies, bluegills, walleyes, few trout, flathead catfish. Productive methods: live bait (salamanders) cast into head of coves where tiny creeks enter. Surface lures off the points after dark. Medium-running plugs trolling near shore for crappies. Minnows for white bass and crappies.



If the bass are off, walleyes, bluegills and big crappies often take up the slack.

Boats are available at Fontana Boat Dock and Almond's Boat Dock, plus a few smaller rentals scattered along the lake. A public boat-launching ramp is provided by the Wildlife Commission six miles east of Fontana Village, on the south side of the lake. In addition to Fontana Village, several motels are nearby.

Hiwassee Reservoir, with its meandering arms and rambling shoreline is a fairly consistent fish producer. Best times: late April through mid-June; fall. Best times of day: before daylight until 9 a.m.; late afternoon into darkness. Fish most likely to be caught: walleyes, largemouth and smallmouth bass, panfish. Productive methods: casting the shoreline with eel-type lures, and small jigs; trolling with live bait in deep water.

Actually the walleyes are the big news here, since they have been in the reservoir long enough to go better than 8-pounds. Rental boats are available and one public boating and fishing access area has been provided by the Wildlife Commission on the Grape Creek Arm of the lake. One additional launching ramp is in the planning stage.

Camping near the lake is limited but motel accommodations are numerous in the surrounding towns.

Although Nantahala Reservoir has been nationally advertised as a red-hot trout lake, most of the good catches are made by local fishermen and then in the late fall and winter. Nantahala has a bountiful population of nice rainbows, and more recently, a growing population of kokanee salmon. The trick is to catch them. Really the problem goes further and is actually one of finding the fish in this deep water. The trout can and do go to depths of 60, 70, and even 100 feet during the summer. Weighted line trolling seems the only answer at these times.

But the anglers who come for trout usually stay and return for smallmouth bass. So it's this segment of the "two-layered" lake that we will be talking about. Best times: mid-June through September. Best times of day: dawn to 8:30 a.m.; dusk. Fish most likely to be caught: smallmouth bass, walleyes, largemouth bass, few bluegills, trout ("in season"). Productive methods: small to medium sized bugs cast close to the rocky banks; wobbling plugs cast toward the shore, retrieved at 3 to 6 feet deep. Kokanee salmon: mostly on spawning run from late October through December.

Only one boat rental dock is located on Nantahala (west side of the reservoir) but two public boat launching ramps provided by the Wildlife Commission are available. One is located on the Choga Creek arm; the other on the Rocky Branch arm. Camping spots on the lake shore are practically nonexistant, but motels are located in nearby towns.

One of the few lakes of the state that has almost exclusively trout fishing is Cheoah, immediately below Fontana. This long, narrow reservoir is quite cold and has considerable current through its entire length. It receives the effluent from not only Fontana, but from Santeetlah Reservoir as well. Another unique thing about Cheoah is that it has muskellunge cruising its depths. Unfortunately, only a handful of these powerful fighters are caught from Cheoah each year, and apparently spawning conditions are not suitable for the muskie.

It's the trout that create the stir in Cheoah. Some rainbows better than 5-pounds are taken annually, and plenty of 9 to 12 inches. The big ones are usually a little hard to find, however.

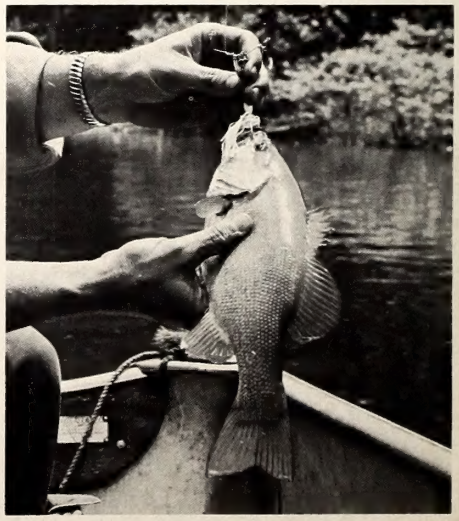
Best time: year round, with fall perhaps the best. Best time of day: little preference, but early morning more likely to produce big trout. Fish most likely to be caught: brook, rainbow and a few brown trout. Productive methods: wet and dry flies in the flat waters of the upper end of the reservoir; spinners in the upper half of the lake; and (of all things) canned sweet corn! Thread three kernels on a number 8 hook and fish with one split shot.

No camping areas are available on the lake. One public boat launching ramp is provided by the Wildlife Commission on the south side of the lake just east of Highway 28 bridge. A boat is helpful in the lower part of the lake, but bank fishing is fairly effective. Be careful of wading, particularly in the upper end.

We have omitted some fine fishing waters of the western part of North Carolina, like Chatuge with its tremendous smallmouth bass, Lake Lure with its record largemouth and big rainbow trout, Glenville and the fine smallmouth there, and so on. The best way to discover this mountain angling is to go fishing! Ask the native fishermen what to use and where to use it. Fish carefully and thoroughly; the fish are there.

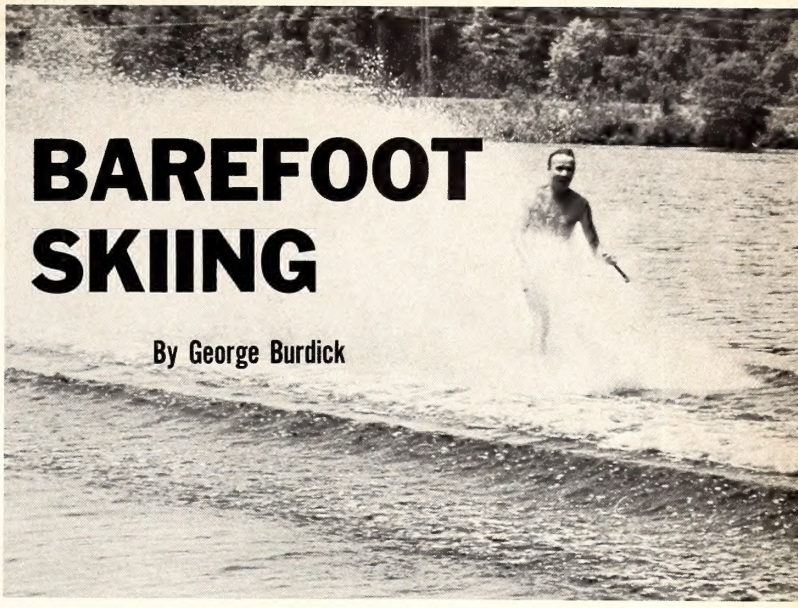
Next month we'll travel to the Piedmont and sample some of the fishing possibilities in the midlands of North Carolina.

This is a Lake Santeetlah smallmouth bass.



BAREFOOT SKIING

By George Burdick



ONE of the biggest thrills I've ever experienced on water is skiing without any skis. After people see this feat performed, I, like other barefoot skiers, get the usual round of questions from those who want to acquire this exhilarating skill.

"Does it hurt your feet?" "How fast do you go?" "Could I learn?" Such questions are one reason for this article. Since learning to ski barefoot could be dangerous, I'd like to offer potential "barefooters" my opinions on the best and safest approach to this challenge.

First of all, if you're not an excellent swimmer and in good physical condition, forget it. Assuming you are physically ready and determined to learn, here is what it takes:

Smooth water, a fast boat with at least 70 horsepower, another boat for "pickup", a large, deep body of water, and no "wild" boat drivers within sight. Now we're ready to work with the laws of physics.

Don't be in a hurry unless you're ready to take the consequences—which could be a bloody nose from hitting your ski, cracked ribs from spilling in the wrong position, or even worse. **It is imperative that you progress slowly** and acquire confidence as you change from a skier on regular skis at low speeds to a high-speed "barefooter."

Therefore, I'd recommend that if you're used to skiing on one ski at 20 mph, get the boat driver to pull you at that speed while you plant your free foot in the water. Turn your toes in and get the feel of going up and down the lake with one foot in the water. Every spill you take should be away from your ski. When you lose your balance, **don't fight it.** Roll up into a ball covering your face with your hands, cover your ribs with the elbows and "cannonball" into the water head-first. Practice head-first spills at low speeds until you have complete confidence in your reflexes.

Now increase your speed about two miles per hour and ski around the lake for a few days, weeks, or months at this speed. Take the time necessary to build your confidence.

Incidentally, I think it would be well worth the necessary effort to learn to ski with either leg so you can alternate putting your left and right foot on the water, while the opposite foot is riding a ski. Also it will help you to learn to ride shoe skis. (This skill will be discussed in another issue of **Wildlife.)**

The important thing is to gradually work up to a steady ride on one ski at high speed, putting one foot into the water as you desire. I weigh 165 pounds and do best at about 40 mph. If you weigh less, you don't need that much speed. Remember, as the speed increases, the water gets harder so you'll have to force your heel into the water.

When you feel you're ready, which is usually long before you actually are, have plenty of assistants handy—two in the boat pulling you and two in a "pickup" boat riding to the side and slightly behind. **Never let another boat stay directly behind you when you're skiing.**

Have the "pickup" boat follow closely enough to pluck you out of the water in a jiffy should you get the wind knocked out of you.

I never wear a ski belt—they are likely to be ripped off anyway at high speed. However, there are vest-type rubber or plastic foam preservers on the market which are ideal for jumping off a ramp and should be O. K. for barefoot skiing. Take it from someone who has taken thousands of spills, that water gets hard at high speeds and some ski belts do your ribs more harm than good if you hit the water wrong.

The day will eventually arrive when you'll decide to set sail and a few tips here may well mean the difference between success and failure:

1. Use a 100-foot tow-rope to get the smoothest water possible directly behind the boat and in the middle of the wake.
2. A double-handle rope is better (easier at first) and you should hold the handles low to the water.
3. Move the bare foot from side to side until you can feel the maximum lift from the spray hitting underneath you.
4. Have a loose binder on your ski. (Never attempt this with a ski that has a metal rudder or brace.)
5. Slide your ski well to the side when you've planted your barefoot, sneak your heel out and control the ski with your toes until you can jerk your foot backwards and to the side and plant it beside your other foot, riding toes pointed inward.
6. Some show skiers take the back binder off to make it easier to step away from their ski; however, once I learned, I never had any trouble using any type of regular ski and binder.
7. Never make more than two or three attempts before resting. When tired, wait 30 minutes before trying again.
8. Terminate your ride by a head-first roll or fall backwards into the water. Don't hesitate when you are about to fall. "Cannonball" in while you have partial control of the situation.
9. It might be well to wear ear plugs and two or three tight-fitting bathing suits.

I hope my instructions are complete enough for those who think they're ready. If you're not ready, you'll find out soon enough and maybe most people should be discouraged anyway. Let me emphasize, **barefoot skiing is not for beginners!** Could be too, that there are better procedures to follow while learning than those I have outlined here. At any rate, I hope I've either discouraged you from trying or helped you avoid injuries when you do.

There is one more question I always get. "Why should any fool want to ski barefoot in the first place?" The answer to that is, why do people jump out of airplanes, go over Niagara Falls in a barrel or ride mad bulls? Skiing barefoot is exciting and besides that, it tickles your feet. **Good luck!**

Wildlife Values

by Clyde P. Patton

I have often thought that one of the principal duties and responsibilities of the Wildlife Resources Commission and its employees is to give constant and sustained emphasis to the fact that our wildlife resources are of priceless value to the people of our State. If the people will recognize wildlife for what it is actually worth before it is dangerously reduced, then we can be sure that it will be protected, well managed, and perpetuated for all future time to come. We should ever keep in mind that in this great land of ours, under a system of government by law, the people, rather than a governmental official or a governmental agency, determine the destiny of all the resources and all the affairs of the state and nation.

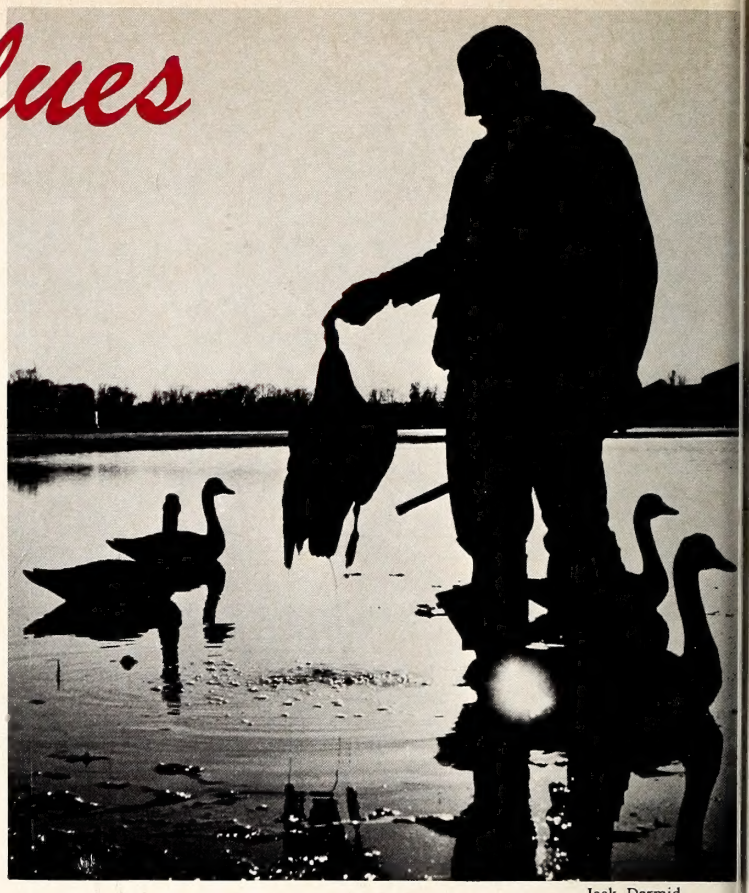
In speaking of values, I like to emphasize, and I hope that you will recognize, that wildlife is one of the world's four renewable natural resources. Soils, forests and water are the other three. Being closely interrelated and taken either as a group or individually, all four of these resources are vital to our economy, our prosperity, our well-being and, indeed, to our very existence.

Animal life (wildlife) in its multitudinous forms includes the microorganisms, and other animals that live in and benefit the soil and water by helping them produce the larger forms of life, such as plants and trees, fish and upland game. Soil would be much less productive without earthworms and other subterranean life that encourage aeration and fix nutrients that make plants grow. Working together, the soil and small subterranean animals and microorganisms, supplemented by water, grow plants which produce and feed the larger, more familiar animals. Insects, birds and animals play an important role in the life cycle of many plants from seed to maturity. Water is necessary to produce and grow aquatic life and to maintain animal, plant and human life on the earth. We see, then, that one resource depends on the other for the natural processes of continuous renewal. Individually or collectively, they have vital functions that fit the cycle of life and serve to sustain man wherever he lives.

When the wildlife resource is considered alone, we like to emphasize its more tangible, better known values: **BUSINESS VALUES, RECREATIONAL VALUES, AGRICULTURAL VALUES,** and **AESTHETIC VALUES.**

Studies of the **ECONOMIC** or **BUSINESS VALUES** attributable to the wildlife resources of North Carolina show that the figure can be placed at an estimated $100,000,000 annually.

This **BUSINESS** or **ECONOMIC VALUE** is an important consideration, because more than any other factor it helps justify a sound, dynamic program of wildlife conservation, protection and management in the face of conflicting demands for soil and water use. The rapidly increasing use of soil and water resources for agriculture and industry and the changes in river basins for flood control and hydroelectric power create hazards for fish and wildlife. To cite one example, I might mention the effort that was necessary



Jack Dermid

It is often difficult to measure the value of wildlife, and we may tend to sell it short. What is this goose worth?

to obtain sufficient water from upstream power and flood control reservoirs to sustain North Carolina's striped bass population on its spawning ground in the Roanoke River. There are many others. Information on the **ECONOMIC VALUE** of wildlife is always important for comparison with the other costs and benefits of soil and water development projects when long-term plans for the future are being established.

Not long ago we had a distinguished visitor in our office at Raleigh. He was Ian Player of Natal, Republic of South Africa. He is the chief game conservator of Zululand and has gained a world-wide reputation as a wildlife conservationist. He made a statement to a group of newsmen and others that is worth repeating. Said Mr. Player: "It has been shown throughout world history that when there is industrial expansion accompanied by population growth, wildlife goes under. In your State, North Carolina, this has not happened. Your wildlife people have stayed right on top of the situation, and your wildlife has been kept in the forefront, and your people should be proud of this."

Keeping our wildlife resources in the forefront among the many other vital and pressing needs and interests of our State is a task that requires the best efforts, the best thoughts and the best judgment of everyone. The North Carolina Wildlife Federation headed up by Turner Battle, has spearheaded the effort to ensure that wildlife is given the consideration it deserves in resources planning for the future.

This is as it should be, and it is the intention and desire of those of us who are honored to serve the sportsmen of North Carolina to cooperate fully with the Federation and its affiliated clubs in this important work.

While the **BUSINESS VALUE** of wildlife is substantial, it

is not to be compared with the recreational value which, like human character, cannot be measured in dollars and cents. Outdoor recreation of any form, and especially hunting and fishing, serves to renew men's spirits by reducing tensions and diverting the mind to the wonders of nature itself. This type of recreation builds and strengthens character—especially among our young people. If you will give me a boy who is interested in the great outdoors and in hunting and fishing, a boy whose father participates in these sports with him and teaches respect for the laws and rules that govern them, then I will give you a man who will be on the jury and not before the jury. The **RECREATIONAL VALUE** of our wildlife as a character-building resource is enormous. It is not only an important part of our great American heritage but it will serve well our state and nation in generations to come.

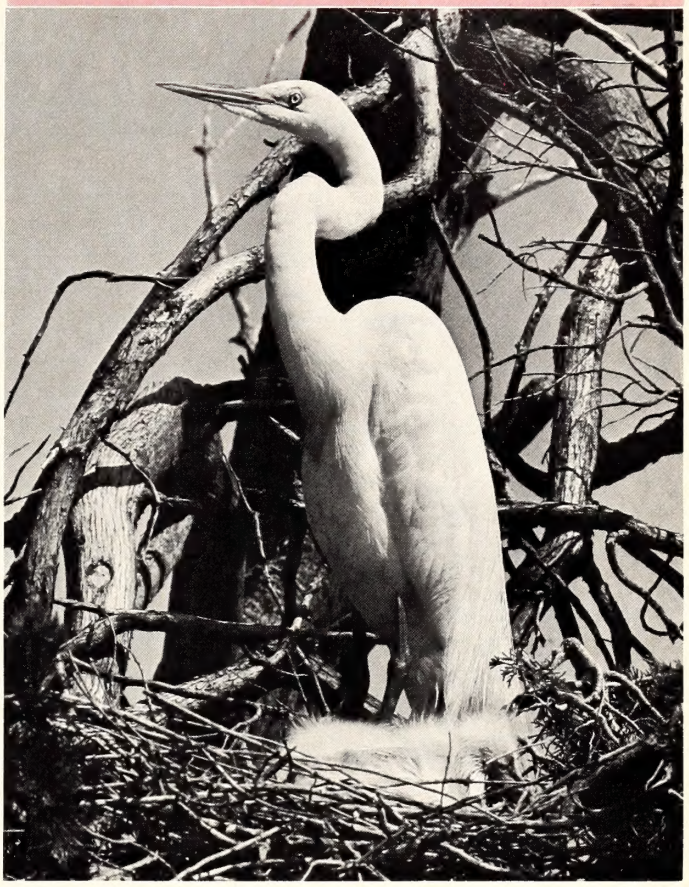
Besides the **BUSINESS** and **RECREATIONAL VALUES** of our wildlife, there are two other important values that are often overlooked. There are the **AGRICULTURAL** and **AESTHETIC VALUES.**

In North Carolina where agriculture is the number one industry, we are keenly aware of the tremendous toll in field crops and gardens that is taken annually by hoards of insects of hundreds of different varieties. While this is not necessarily a strictly modern problem, it is one that through the years has become gradually more serious. Many people believe and, indeed, there is much evidence that a dwindling population of song and insectivorous birds, the natural enemies of insects, is contributing substantially to the increasingly difficult insect control problem. Today, farmers are required to spend millions on insecticides to have hope for a successful crop year. The problem is compounded when we are forced to admit that very little is known about the actual effects of these insecticides on bird life. One thing we are sure of—a fact that has been proved by scientific study—birds and their young eat and destroy many times their weight in destructive insects each summer. Their value to the farmer and to agriculture interests is tremendous and is in direct proportion to their population.

Joel Arrington

Many of our wildlife species have multiple values like this wren. These and other song birds aid the farmer in controlling insect pests, and at the same time, provide hours of enjoyment by their very presence.

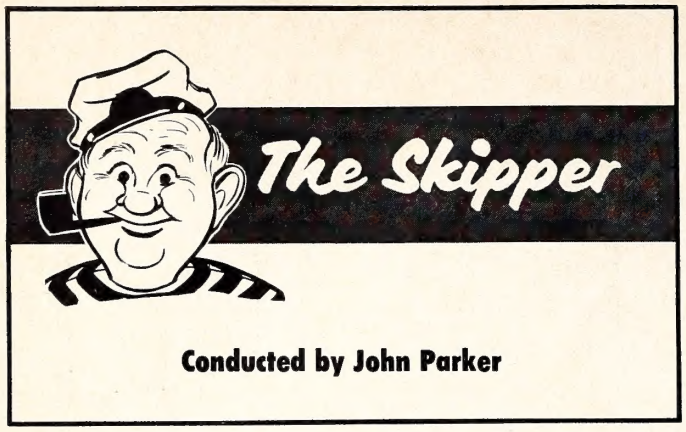
Perhaps the most difficult value to appraise is the aesthetic one. Surely this American egret is worth more in giving pleasure to its viewers than a simple "market" value. Careful consideration is due these values.



Joel Arrington

Wildlife has **AESTHETIC VALUE**—the benefits which come to thousands of people in our State each day from observing, hearing, photographing and feeding it. It would be difficult to say how much sheer pleasure comes to those who watch, feed and photograph the gray squirrels on Capitol Square in the city of Raleigh each year. This is a typical example of a wildlife value that makes up an important part of the total worth of the wildlife resources to more than 4,000,000 people in our great State.

Through the years since 1947 when it was created, your Wildlife Resources Commission has sought, with your help, to develop the kind of wildlife conservation program that would be worthy of confidence and effective in protecting and perpetuating these great, important values about which we have spoken. You have, perhaps, heard Wildlife employees speak about this program many times on many occasions. In capsule form it can be described in five words—Regulation, Enforcement, Management, Education and Research. These activities are as basic today as they were 17 years ago when emphasis on them was initiated. Working together, we can continue to build on them as a base with full assurance that they will produce favorable results.



Conducted by John Parker

ALTHOUGH they claim credit for the invention of the telephone and tractor, so far the Russians have said nothing about the outboard motor. They, like the rest of the world are uncertain just how the whole thing got started.

Stories vary considerably and depending on how you want to look at it, the outboard may date back as far as 1864. At that time, a Frenchman named de Sanderal fashioned a steam powered multi-motor boat which was driven by no less than five propellers. Evidently, it wasn't too successful. Monsieur de Sanderal soon gave up the idea.

The next two decades saw several more attempts to build practical portable engines to propel boats. A host of Frenchmen, one or two Germans and a redoubtable Englishman all tried and failed.

The first real breakthrough came in 1892 when William Steinway of piano fame imported a gasoline outboard from Germany. It was the handiwork of Gottfried Daimler. Although it met with some success, fewer than 100 Daimler motors were produced and less than a dozen were known to have been used in this country.

In 1907, Cameron B. Waterman, a Detroit machinist, patented an outboard motor which enjoyed modest success. Two years later, Ole Evinrude, then a young pattern maker in Milwaukee, developed what has since come to be recognized as the world's first commercially successful outboard motor. How it came about is a story itself.

According to an oft-told yarn, it all started at a picnic when a young lady named Bess Cary decided some cold ice cream would go well on that hot, mid-summer day. Ole, being Bess's beau, agreed even though it meant rowing two miles to the nearest town. On the way back—with the ice cream melting—Ole started thinking there must be a faster and easier way to propel a boat. A gasoline engine hitched to a propeller and stuck onto the end of a rowboat seemed to be the logical answer.

Building such a contraption was not as simple as it sounded. But it due time, Ole completed it and made ready for the moment of truth. He attached his "knuckle buster" to the transom of a rented rowboat and gave the flywheel a spin. It worked!

Convinced he could build a better engine, Ole immediately set out to do just that. His second motor started easier and ran smoother. In fact, it worked so well that Ole loaned it to a friend who came back the next day with orders for ten more just like it.

Ole's first ten "production" motors were entirely hand made, weighed 62 pounds and sold for $62 each. They led to other orders and before long he had made and sold 25 of his "coffee grinders." This term was coined by Bess who had by that time become Mrs. Ole Evinrude. It was she who penned the now famous newspaper ad which encouraged boatmen to "Throw Away the Oars." They did and a new industry was born.

It seems a trifle inadequate to say only that the outboard motor has come a long way since the day that Ole's ice cream melted. Let's enumerate our blessings in the era of propulsion and see just how far the old kicker has advanced.

Today, there are at least 125 different models of outboard power plants listed under 30 or more brand names. This number does not include the inboard-outboard and considers only a few of the foreign makes.

Included in this list are six air-drive units, eleven electric trolling motors, seven jet units and one electric-jet. Ole's Evinrude is now made in 13 models as is "Mr. K's" Mercury. Other popular makes are available in various models. Horsepower of this copious listing ranges from less than one to 100. On one end of this range is the electric motor which usually developes less than one or about one-third horsepower. On the other end is the big six-cylinder Mercury which is rated at 100 horsepower. In between these two, there is a motor for the most discerning of boaters.

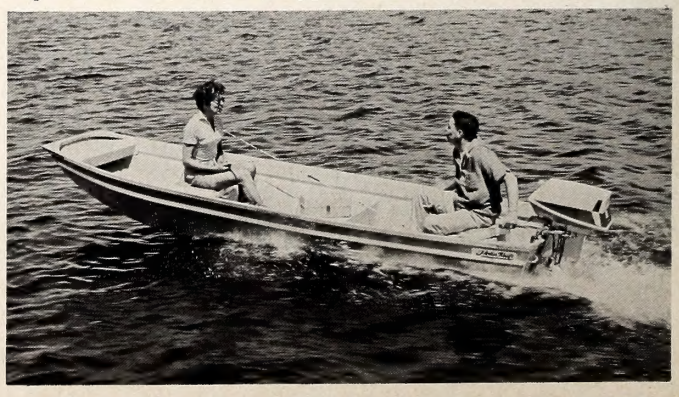
The prices of today's outboards will vary all the way from a modest $80 to a sizable $1250. The thrifty sportsman may find an outboard of several horsepower, especially of the air-cooled type, at one of the larger sporting goods outlets for less than $80. That $1250 price for the big one can increase as you add the extras.

As for extras, a partial listing would look something like this: electric starting for those models not originally equipped with same, electric engine tilt, D. C. generator, choice of propellers, radio noise suppression kit, lower unit extension, motor tilt cut off switch, single lever controls, guide rod type steering, electric instruments, etc.

Volumes could be written on motor improvements and innovations which have given the trailer-sailor a truly dependable power package. Many of the improvements are highly technical and are obvious only to the engineer or maintenance man. Others, like easier manual starting and better gas economy, are more apparent to the boater.

There are still some outboard motor skeptics around but very few of these have valid reasons to feel this way. If we don't give our motors proper care or if it is just plain worn out, then we may have problems. However, if this happens we can safely blame ourselves and not the outboard industry. They are doing their part.

To all of the pioneers in outboard motor manufacturing, regardless of their position in the chronology of the business, and to the manufacturers of today that give us a modern, dependable motor, the Skipper says many thanks.

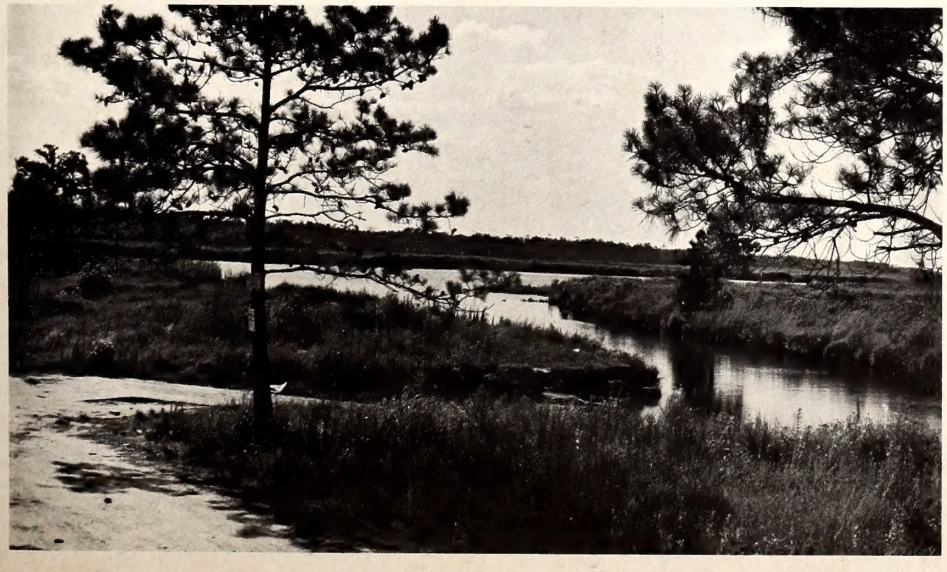


Fishing and Boating Access Areas 1964

Listed here and on the next two pages are the Wildlife Commission's fishing and boating access areas. The map will help locate them for you.

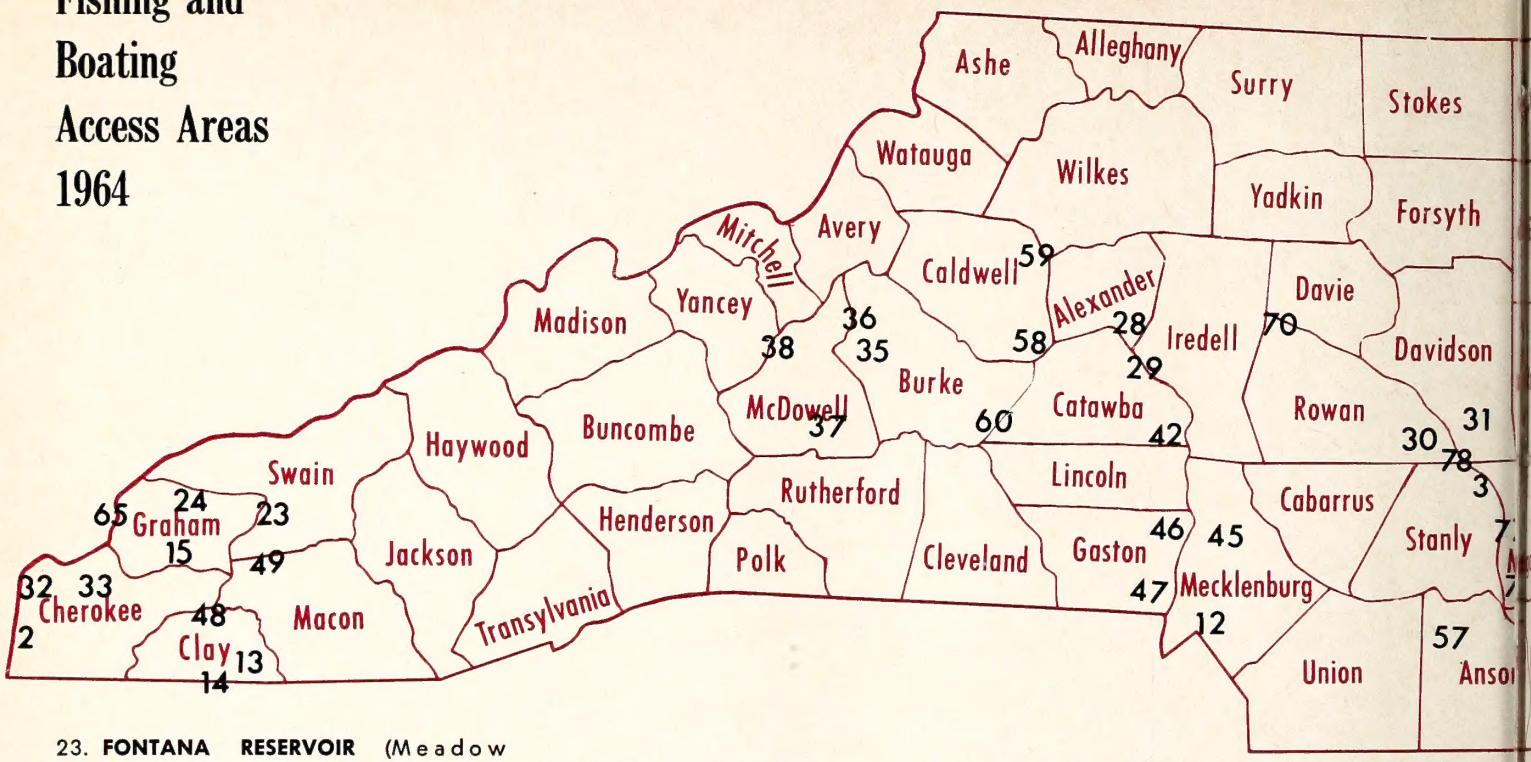
Above is the boat ramp on Cheoah Reservoir, in the far western part of the State. Car and trailer parking is provided.

Below is the access area at Coinjock, very near Currituck Sound and the Intracoastal waterway. Good fishing starts here.

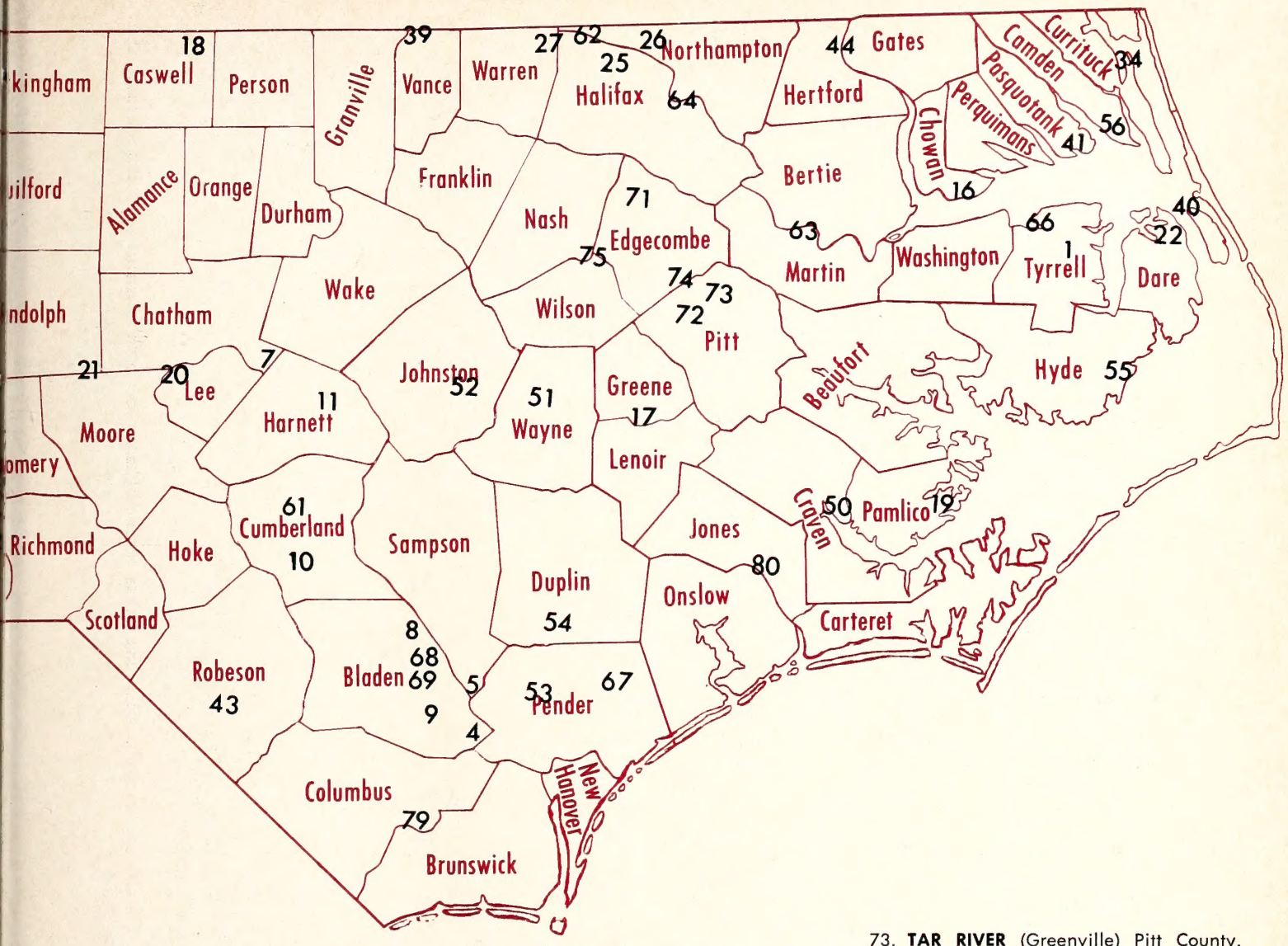


1. **ALLIGATOR RIVER** (Gum Neck Landing) Tyrrell County—Area in planning stage.
2. **APALACHIA RESERVOIR** Cherokee County. Immediately downstream from Hiwassee Dam on the south side.
3. **BADIN RESERVOIR** (Lakemont) Montgomery County. South of N. C. Highway No. 49, west of N. C. Highway No. 109.
4. **BLACK RIVER** (Hunt's Bluff) Bladen County. Eight miles east of Kelly, south of N. C. Highway No. 53 on Secondary Road No. 1547.
5. **BLACK RIVER** (Ivanhoe) Sampson County. Just west of Ivanhoe on Secondary Road No. 1105.
6. **BLEWETT FALLS RESERVOIR** (Pee Dee Recreation Area) Anson County. Two miles north of Pee Dee River Bridge (U. S. Highway No. 74) via Secondary Roads Nos. 1748 and 1747.
7. **CAPE FEAR RIVER** (Avent's Ferry Bridge) Chatham County. Two miles southwest of Corinth via N. C. Highway No. 42 at Avent's Ferry Bridge.
8. **CAPE FEAR RIVER** (Dublin) Bladen County. Two miles north of Dublin via Secondary Road No. 1336.
9. **CAPE FEAR RIVER** (Elwell's Ferry) Bladen County. Two miles northwest of Carvers at Elwell's Ferry via Secondary Road No. 1730.
10. **CAPE FEAR RIVER** (Fayetteville) Cumberland County. Four miles south of Fayetteville on N. C. Highway No. 87.
11. **CAPE FEAR RIVER** (Lillington) Harnett County. Three miles east of Lillington.
12. **CATAWBA LAKE** (Wither's Bridge) Mecklenburg County. Eleven miles southwest of Charlotte on N. C. Highway No. 49.
13. **CHATUGE RESERVOIR** (Jackrabbit) Clay County—Area incomplete.
14. **CHATUGE RESERVOIR** (Ledford's Chapel) Clay County. Five miles east of Hayesville via U. S. Highway No. 64 and Secondary Road No. 1151.
15. **CHEOAH RESERVOIR** Graham County. Adjacent to N. C. Highway No. 28.
16. **CHOWAN RIVER** (Edenhouse Bridge) Chowan County. Adjacent to U. S. Highway No. 17.
17. **CONTENTNEA CREEK** (Snow Hill) Greene County. At Snow Hill, one block east of U. S. Highway No. 258.
18. **DAN RIVER** (Milton) Caswell County. Just northwest of Milton on N. C. Highway No. 62.
19. **DAWSON CREEK** (Oriental) Pamlico County. Off County Road No. 1302, four miles southwest of Oriental.
20. **DEEP RIVER** (Carbonton) Moore County. Just south of Carbonton on Secondary Road No. 1621.
21. **DEEP RIVER** (Sandy Creek) Randolph County. One-half mile west of Ramseur on U. S. Highway No. 64.
22. **EAST LAKE** (Mashoes) Dare County. Three miles north of Manns Harbor on Secondary Road No. 1113.

Fishing and Boating Access Areas 1964



23. **FONTANA RESERVOIR** (Meadow Branch) Swain County—Area in planning stage.
24. **FONTANA RESERVOIR** (Yellow Branch) Graham County. Six miles east of Fontana Village via N. C. Highway No. 28 and Secondary Roads Nos. 1241 and 1244.
25. **GASTON RESERVOIR** Halifax County—Area incomplete.
26. **GASTON RESERVOIR** Northampton County—Area in planning stage.
27. **GASTON RESERVOIR** Warren County—Area in planning stage.
28. **HICKORY LAKE** (127 Bridge) Alexander County. Two miles north of Hickory on N. C. Highway No. 127.
29. **HICKORY LAKE** (Oxford) Catawba County. Southwest of Oxford Dam via N. C. Highway No. 16 and Secondary Roads Nos. 1453 and 1519.
30. **HIGH ROCK LAKE** (Dutch Second Creek) Rowan County. Eight miles southwest of Salisbury at Bringle's Ferry Road Bridge (Secondary Road No. 1002).
31. **HIGH ROCK LAKE** (Southmont) Davidson County. Off Secondary Road No. 1100, one mile south of Southmont.
32. **HIWASSEE RESERVOIR** (Grape Creek) Cherokee County. Five miles northwest of Murphy on Joe Brown Highway (Secondary Road No. 1326).
33. **HIWASSEE RESERVOIR** (Hanging Dog) Cherokee County—Area in planning stage.
34. **INLAND WATERWAY** (Coinjock) Currituck County. One mile east of Coinjock on Secondary Road No. 1142.
35. **JAMES LAKE** (Canal Bridge) Burke County. Two miles northwest of Bridgewater on N. C. Highway No. 126.
36. **JAMES LAKE** (Linville Arm) Burke County. One mile east of Linville River Bridge on N. C. Highway No. 126.
37. **JAMES LAKE** (North Fork) McDowell County. One-half mile north of U. S. Highway No. 221-70 intersection west of Marion via Secondary Roads Nos. 1501 and 1552.
38. **JAMES LAKE** (Wildlife Club) McDowell County. One mile north of Nebo off N. C. Highway No. 126 on Secondary Road No. 1548.
39. **KERR RESERVOIR** (Nutbush Creek) Vance County. North of Henderson between Satterwhite Point Road (Secondary Road No. 1319) and N. C. Highway No. 39 off Secondary Road No. 1308.
40. **KITTY HAWK BAY** (Avalon Beach) Dare County. At Avalon Beach, one-half mile west of U. S. Highway No. 158.
41. **LITTLE RIVER** (Hall's Creek) Pasquotank County. Between Nixonton and U. S. Highway No. 17 on Secondary Road No. 1140.
42. **LOOKOUT SHOALS LAKE** Catawba County. Near Lookout Dam, six miles northeast of Conover on Secondary Road No. 1006 off N. C. Highway No. 16.
43. **LUMBER RIVER** (Lumberton West) Robeson County—Area in planning stage.
44. **MEHERRIN RIVER** (Murfreesboro) Hertford County. North side of U. S. Highway No. 258 Bridge at Murfressboro.
45. **MOUNTAIN ISLAND LAKE** (Davidson Creek) Mecklenburg County, Northwest of Charlotte and six miles east of U. S. Highway No. 21.
46. **MOUNTAIN ISLAND LAKE** (Lucia) Gaston County. One and one-half miles east of Lucia via N. C. Highway No. 16 and Secondary Road No. 1909.
47. **MOUNTAIN ISLAND LAKE** (16 Bridge) Gaston County. Twelve miles northwest of Charlotte on N. C. Highway No. 16 and Secondary Road No. 1909.
48. **NANTAHALA RESERVOIR** (Choga Creek) Macon County. East of Andrews via Secondary Road No. 1505 and U. S. Forest Service Road No. 30.
49. **NANTAHALA RESERVOIR** (Rocky Branch) Macon County. Nineteen miles west of Franklin via U. S. Highway No. 64 and Secondary Road No. 1310.
50. **NEUSE RIVER** (Bridgeton) Craven County. One mile north of Bridgeton just off U. S. Highway No. 17.
51. **NEUSE RIVER** (Goldsboro) Wayne County. Adjacent to U. S. Highway No. 117 south of Goldsboro.
52. **NEUSE RIVER** (Richardson's Bridge) Johnston County. Off Secondary Road No. 1201 approximately nine miles southeast of Smithfield.
53. **NORTHEAST CAPE FEAR RIVER** (Holly Shelter) Pender County. At Holly Shelter Refuge, six miles south of N. C. Highway No. 53 via Secondary Roads Nos. 1523, 1522, and 1520.
54. **NORTHEAST CAPE FEAR RIVER** (Kenansville) Duplin County. Between Kenansville and Beulaville on N. C. Highway No. 24.
55. **PAMLICO SOUND** (Engelhard) Hyde County—Area incomplete.
56. **PASQUOTANK RIVER** (Elizabeth City) Camden County. Adjacent to U. S. Highway No. 158 northeast of Elizabeth City.



57. **PEE DEE RIVER** (109 Bridge) Anson County. Eight miles north of Wadesboro on N. C. Highway No. 109.
58. **RHODHISS LAKE** (Castle Bridge) Caldwell County. North of Connelly Springs at Castle Bridge via Secondary Road No. 1001.
59. **RHODHISS LAKE** (Dry Pond) Caldwell County. One mile southwest of Granite Falls.
60. **RHODHISS LAKE** (John's River) Burke County. Two miles east of Morganton.
61. **RIM LAKE** Cumberland County. Off U. S. Highway No. 401 nine miles west of Fayetteville.
62. **ROANOKE RAPIDS RESERVOIR** (Thelma) Halifax County. Two miles northeast of Thelma.
63. **ROANOKE RIVER** (Hamilton) Martin County—Area in planning stage.
64. **ROANOKE RIVER** (Weldon) Halifax County. On Highway No. 301 at Weldon.
65. **SANTEETLAH LAKE** (Ranger Station) Graham County. Five miles west of Robbinsville on Secondary Road No. 1127.
66. **SCUPPERNONG RIVER** (Columbia) Tyrrell County. One mile west of Columbia off U. S. Highway No. 64.
67. **SHELTER CREEK** Pender County. Nine miles east of Burgaw on N. C. Highway No. 53.
68. **SOUTH RIVER** (Sloan's Bridge) Bladen County. Two miles southwest of Garland on U. S. Highway No. 701.
69. **SOUTH RIVER** (SR 1007 Bridge) Bladen County—Area in planning stage.
70. **SOUTH YADKIN RIVER** (Cooleemee) Davie County. Two miles northwest of Cooleemee on N. C. Highway No. 901.
71. **TAR RIVER** (Bell's Bridge) Edgecombe County. One mile north of Tarboro on U. S. Highway No. 44 at Bell's Bridge.
72. **TAR RIVER** (Falkland) Pitt County. N. C. Highway No. 43 east, eight and one-half miles from Greenville to SR 1400. Approximately .6 mile on SR 1400 to area.
73. **TAR RIVER** (Greenville) Pitt County. Three miles northwest of Greenville via U. S. Highway No. 13 and Secondary Roads Nos. 1001 and 1401.
74. **TAR RIVER** (Old Sparta) Edgecombe County. On N. C. Highway No. 42 at Old Sparta.
75. **TAR RIVER** (Rocky Mount) Edgecombe County. Adjacent to Business Highway No. 301.
76. **TILLERY LAKE** (Lilly Bridge) Montgomery County. South of N. C. Highway Nos. 27 and 73.
77. **TILLERY LAKE** (Swift Island) Montgomery County. Five miles southeast of Albemarle off N. C. Highway No. 27-73.
78. **TUCKERTOWN RESERVOIR** (Flat Creek) Rowan County. From N. C. Highway No. 49 .6 mile west of Yadkin River, SR 1004 west 1.7 miles to SR 2152 north 3.5 miles to area.
79. **WACCAMAW LAKE** Columbus County. On lake shore road west of N. C. Highway No. 214.
80. **WHITE OAK RIVER** (Haywood's Landing) Jones County. Five miles southeast of Maysville, south of N. C. Highway No. 58.

FORAGE FOR DEER

U. S. Forest Service

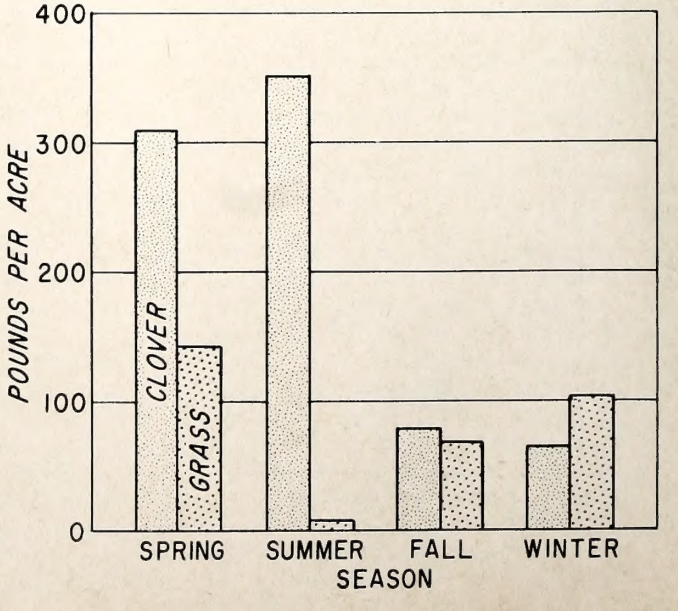
by
William H. Moore,[1] Frank M. Johnson,[2] John Oberheu,[3] and Donald D. Strode[4]

EVERY hunter who has visited managed game areas in the South has undoubtedly seen old fields, logging roads, or other clearings planted with forage crops. Furthermore, if he has looked closely, he probably has seen some species of wildlife, especially deer, feeding in most of them. For years, state game agencies have seeded old fields and clearings to various species and mixtures of agricultural forage crops, and many fields have been established. These pastures provide enormous quantities of succulent forage and make an important contribution to the food supply of many deer herds of southern ranges. But the measures are expensive to install and maintain. Despite high costs, widespread use, and assumed values, there has been very little evaluation of species preference or the degree of utilization except by visual appraisals.

Through the cooperative efforts of the U. S. Forest Service, the North Carolina Wildlife Resources Commission, and the U. S. Fish and Wildlife Service, a two-year study was conducted to help determine what species might be best suited for these plantings and to evaluate species differences in terms of use by deer.

Two clovers, red and ladino, and six grasses—orchard grass, Oklahoma brome, shade fescue, Kentucky 31 fescue, tall oatgrass, and Kentucky bluegrass—were seeded in plots in two fields on the Pisgah National Forest during early spring of 1961. Relative preference by deer was determined by clipping small protected and unprotected sample plots periodically to determine the differences in utilization of species by seasons. Clipped samples were oven-dried and weighed and differences between protected and unprotected plots were recorded as the actual amount of forage utilized since last clipping. Results are shown in the figure below.

The graph below shows the average monthly utilization of clover and grass forage by season, based on project results.



1/ Southeastern Forest Experiment Station, Forest Service, U. S. Dept. Agriculture, Asheville, N. C.
2/ Fish and Wildlife Service, U. S. Dept. Interior, Asheville, N. C.
3/ Formerly with the North Carolina Wildlife Resources Commission, and presently with the U. S. Fish and Wildlife Service, Atlanta, Ga.
4/ National Forests of North Carolina, Forest Service, U. S. Dept. Agriculture, Asheville, N. C.

The study confirmed widespread assumption that clovers, when available, are utilized much more heavily than grasses; it also indicated that deer generally prefer clover forage. The heaviest consumption of clovers occurred during the spring and summer, but dropped sharply during late summer and continued to decline through the winter. On the other hand, grass consumption occurred mostly during late fall, winter, and early spring. Grass consumption during the summer was very slight.

The pattern of clover use appeared to reflect growth or production as well as preference. Average stubble height was about five inches during the spring and summer, but declined to less than one inch during the late fall, winter, and early spring. It appeared that consumption of available clover, as indicated by high stubble height, was light during late summer and early fall—a period when native foods, including mast and fruit, are abundant. During the fall and winter, however, almost all available clover forage was utilized before an appreciable use of grasses began.

Because stubble heights were about the same for both species sampled, difference between the two clovers seemed to be a manifestation of production rather than preference. The greater utilization of red clover is not surprising when differences in growth habits are considered. Ladino is low-growing, with long, creeping branches, whereas red clover is upright, with ascending stems reaching two or three feet; red clover not only produces more forage but apparently is more easily taken than ladino. Unfortunately, red clover is a biennial and not suited for permanent plantings, but ladino, a long-lived perennial, will remain productive in permanent plantings for long periods of time.

Utilization of the grasses apparently began in mid- or late fall when available clover forage became greatly reduced and grass consumption apparently exceeded the consumption of clovers during late winter and early spring. During the second year, all species were heavily used during the rapid growth period in the spring and early summer.

Orchard grass and Oklahoma brome were the most heavily utilized grasses, averaging 127 and 93 pounds per acre per month, respectively, for the winter-spring or critical period. Shade fescue was next with 84 pounds. Consumption of red and ladino clovers was 105 and 76 pounds, respectively, and use of the three other grasses—tall oatgrass, Kentucky 31 fescue, and Kentucky bluegrass—was 75, 45, and 15 pounds per acre per month for the same period.

This is a typical mountain site where grasses and clovers might be established to provide nutritional foods for deer.

Shade fescue, though ranking third in preference among the grasses, may be the best prospect for skid roads and trails because of its tolerance, vigor, and longevity. When adequate stands are established, shade fescue produces a thick and continuous sod. Red clover may be desirable for temporary plantings where there is an immediate need for large amounts of forage. On areas where native forage species are inadequate and year-round supplemental feeding is desirable, grass-clover mixtures may be preferable.

Carefully determined figures were obtained by periodically clipping protected and unprotected sample plots. In this way the degree of utilization for the six grasses and two clovers was discovered. These findings will be valuable to technicians managing deer ranges.

NORTH CAROLINA WILDLIFE

RESOURCE-O-GRAM

A ROUNDUP OF THE LATEST WILDLIFE NEWS

Hunting Regulations Established

At its June meeting the Wildlife Resources Commission established hunting and trapping regulations for the 1964-1965 season on nonmigratory game and furbearing species. The State will again have a statewide squirrel season, as well as a uniform season on rabbits and quail. The squirrel season will be from October 15 to January 1, with the rabbit and quail seasons from November 21 to February 15. The wild turkey season that opened January 2 last year and closed February 15 will open November 21 with the rabbit and quail seasons and end February 15.

Only a few minor local changes were made in deer and bear-hunting regulations with a few north-central counties added to the area in western N. C. where dogs will not be permitted for taking deer.

The new hunting regulations will be published by the Commission and distributed to license dealers to be issued with hunting licenses beginning August 1.

Boating Accidents "Up"

Thus far in the boating season there has been an increase over last year's boating accident-fatality rate. The number of accidents is running about the same as last year, but there has been a higher percentage of fatalities. Most of the fatalities could have been avoided if victims had been wearing or had access to life preservers.

Look In Your Billfold!

Take a look at your hunting or fishing license. If you have been fishing on a combination hunting-fishing license it expires on the last day of July. County and state resident fishing licenses do not expire until December 31.

Dove, Marsh Hen Dates Expected

The U. S. Fish and Wildlife Service is expected to announce dates and bag limits for mourning dove and marsh hen shooting in late July or early August, with the waterfowl rules to be announced later on. A bumper crop of doves and marsh hens is expected this year, with the waterfowl outlook still dim.

Poverty and Wildlife

by Frank B. Barick
Chief, Division of Game

PRESIDENT Johnson has declared war on poverty. In this war huge sums of money are to be appropriated in a massive effort to create new opportunities for gainful employment in depressed areas. We are all 100 percent behind President Johnson in this war but respectfully suggest that he and his lieutenants have overlooked a tremendous source of potential income—**a source of income which will not require huge sums of government money,** a source of income which has lain dormant over the years and merely awaits a modicum of encouragement to produce for our people.

Wildlife is the source of this potential income. With the cooperative effort of her citizenry, wildlife can bring an additional 100 million dollars per year into those North Carolina communities which need it the most. Other states in the Appalachian region also have this opportunity but few have the potential which exists here in North Carolina. North Carolina is strategically located in reference to population centers of the eastern seaboard. She lies within a few hours of air travel of three-fourths of the people of our nation; and her airways and highways are already developed to the point where these people can get here easily. She has fertile soils, abundant water and a soundly based program of wildlife management. Acceleration of this program can be accomplished by a grass roots movement—provided the people are willing.

The fulfillment of this opportunity will require that we re-examine some old concepts and bring them into line with recent developments. Take highway construction for example. At one time road construction consisted of improvement of existing routes. More recently, it would appear that a secondary function of highway construction is the elimination of wilderness. We respectfully suggest that North Carolina's wilderness is not in need of further fragmentation. Let's get back to the earlier approach of improving existing routes, through or close by existing communities, rather than searching out virgin routes for the bulldozer. These wild areas can then more effectively produce the wildlife product for which they are best suited.

Another concept in need of re-examination has to do with agricultural drainage. Removal of excess water from cropland to improve production is certainly sound management. But it is not necessary to completely remove the water from downstream swamp lands which produce valuable timber and wildlife. Much of our coastal plain forestry is associated with wetlands drainage to increase production of pine. What many people don't seem to realize, however, is that not all wetlands are alike. Most **are** suited for conversion to pine, but there are many acres of hardwood bottomlands growing tupelo, cypress and related species which cannot be profitably converted to pine and which actually can be more productive if managed for hardwood.

Sites such as these provide ideal habitat for waterfowl, a wildlife crop for which demand has increased tremendously during the past few years. The "market value" of duck hunting holds great promise of contributing to the economy of certain depressed areas. Its retention and development will not cost huge sums of federal money, or state money or local money. Actually, in some cases it can best be assured as a crop by **not** spending money—not spending money to destroy the necessary habitat. Recent developments indicate that farm lands **can** be drained without destroying swamps, all we need is more coordination at the local level and an open-minded approach to these additional sources of income.

A third concept that may be in need of revision has to do with laws and regulations. To attain full production in our wildlife areas we need to not only increase public awareness of the value of wildlife but also to reduce illegal drain of wildlife resources by strengthening law enforcement. Only by restricting harvest to legal seasons and bag limits can we hope to attain the full potential of wildlife production. Efforts in this direction often bring forth complaints about excessive restrictions and infringement of freedom. When carefully analyzed, however, we find that these complaints usually originate with those who would be most affected, i.e., the would-be poacher. Hunters who abide by laws and regulations are grateful for their existence because they realize that impartial enforcement of game laws constitutes the strongest guarantee of an adequate wildlife supply. Individual restraint for the common cause is the hallmark of civilization.

A fourth concept in need of re-evaluation has to do with expansion of hunting opportunity, especially on and about wildlife management areas. Many of these are on lands owned by the U. S. Forest Service. Full protection and management has increased production on these areas and in many sections there is evidence of some overflow of game into adjoining lands. As this overflow is accelerated, hunting restrictions on management areas can be relaxed. It is our hope that some day, instead of requiring a **daily** permit, hunters can be allowed to purchase a **season** permit and use it over a much wider area. But first things first —we must develop the overflow into surrounding lands before we can change the permit system. To do otherwise would destroy what we have labored so

hard to develop over the past many years. However, it will require the **united** effort of many people to accomplish the potential overflow.

To briefly recapitulate—in order to secure the full benefits that wildlife can contribute to our economy we must (1) see to it that wild areas are not destroyed in the name of progress, (2) strengthen laws and regulations to increase production and (3) expand the opportunity for harvest.

The Increasing Value of Wildlife

We can more fully realize the potential value of wildlife in the war against poverty if we pause for a moment to examine recent trends:—in growth of human populations, expansion of leisure time through increased use of automation in industry, expansion of travel facilities, industrialization of agriculture and overproduction of food and the accelerated tempo of living, for we do everything faster than we used to—producing, selling, communicating, and traveling.

The accelerated tempo of modern living has its rewards in more abundant possession of material things, but it also takes its price in accelerated attrition of the human resource. Rebuilding of the human resource has become a major effort of our society, monumented by the expansion of professional psychiatry. Of course, some may actually prefer the psychiatrist's couch to the release of tension

Providing the hunter with a place to hunt can be both a public service and profitable.

through communion with nature, but there are literally millions who prefer the latter course, and it is with these millions that we are concerned. They are the market that can be cultivated by rural North Carolina, especially in pockets of poverty, to the mutal benefit of both.

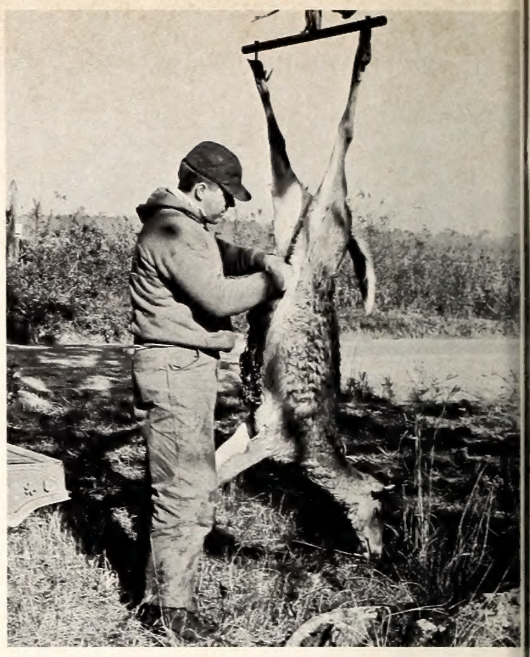
Just a few statistics to sharpen our focus: the 1950 population of the United States was 151 million and in 1960 it was 180 million. By 1976 it will be 230 million and by 2000 it will be 349 million. Also by the year 2000 there will be a tripling of the amount of leisure time over that available today. Population expansion is expected in North Carolina also, but at a much slower rate. The relatively low population in North Carolina and the fact that we still have wild lands left to enjoy is what places us in such a good position to take advantage of the exapnding market which surrounds us.

To those who have left the country for employment in the city, nothing provides greater pleasure than to return again to the scenes of their childhood, to re-live their days afield with gun and dog. To those who have never been so fortunate, a hunting trip is high adventure, and worthy of a high price. There was a day not long ago, when the value of a duck or deer or grouse or quail was measured in terms of money saved in providing food for the table. Thanks to modern agriculture this is no longer so. Even at the lowest minimum wage, the time and money spent in killing a duck or a deer would buy much more meat if spent at the super-market. The value of game today is not as food for the body but rather as food for the soul. The recreational value of hunting for game is much greater than its value as food for the table.

The primary value of wildlife today is recreational therapy. Recreational therapy is a high-priced term and we use it intentionally, to emphasize its high-market value. There are more and more people who are anxiously searching for places where they can secure this therapy. A few years ago letters from distant cities in search of hunting opportunities crossed our desk only during the hunting season. Now we get them almost daily through the year. The market is there, and it is expanding in volume and value—for those who have the initiative and imagination to take advantage of it.

The traditional argument against illegal hunting is that it is unsportsmanlike. Hunting out of season or by illegal means is not the fair thing to do. We venture to guess that this argument carries little weight with the person who uses this means to provide meat for the table. But this same person would think twice if he realized that serving as a guide for people in need of recreational therapy would not only net him much more meat on the table, but also a better table and a better house in which to keep it.

Just for example, let us compare the meat value with the recreational therapy value of a deer. A 130 pound deer will dress out to about 60 pounds of meat on the table, which at 60 cents a pound would be worth about $36. This same deer has a recreational value of over $300. This sounds rather high, but just stop for a moment to add it up. Using wildlife management area figures, it requires an average of 20 man-days of



Jack Dermid

The actual dollars and cents value of this deer goes far beyond "meat value."

hunting to kill a buck deer. Using the low figure of $3.50 per day (many private property owners charge $5 to $20) we have an average value of $70 per deer in hunting permits alone. Guide fees even at only $5 per day would add another $100 to the value of the average deer. Lastly, consider that the deer hunter must travel to the hunting area, find food and lodging, buy shells and other supplies, and it is not hard to come up with another $5 to $10 per day. Averaged at $7 per day this would amount to $140 per deer killed that would stay with the people who provided these goods and services. Thus, the deer which has a food value of $36 to the poacher would be worth $100 to him in guide fees, $70 to the landowner in hunting fees, and $140 to local businessmen.

Thus, by converting illegal hunting to recreational hunting within legally constituted seasons, everybody profits—the underemployed, the landowner, and the businessman. Similar values can be demonstrated for duck hunting, quail hunting, grouse hunting, turkey hunting, etc.

The point is that wildlife has a cash value which is much greater than most of us realize, for most of us have taken wildlife for granted. Not only does wildlife have a very substantial cash value, but also, this cash value is increasing at a rate much faster than the general economy. The pressures which are forcing its value upward are, as we indicated above, increasing demand due to more people with more leisure time on the one hand, and, on the other hand, decreasing supply due to shrinking habitat. At one time we thought of forests as being of value primarily for production of timber. More recently there has de-

veloped an increasing awareness of their importance as watersheds, but if the present trend continues we can look forward to the day when their greatest value will be in the role of recreational areas.

Production Capacity

Our concept of how much wildlife an acre can produce is also subject to revision. The science of wildlife management is very young and we still have a long way to go in our quest of complex management information. But we already know enough about managing several species that we can look forward to the time when the major problem will be not of quantity but quality. With new breakthroughs in game management we will have to guard against over-production and we shall be more concerned with preservation of a quality of wildness which retains in hunting the quality of challenge. Without this quality, hunting would degenerate to "shooting fish in a barrel."

We do not mean to imply that all the answers are at hand. But we do know that game is responsive to management and that it can be increased or decreased by application of the proper practices. While we have yet to find out the safe limits of increase in most species, we do know that increases are possible considerably beyond what we thought possible a few years ago.

In the case of deer, for example, the recommended population for many years was one deer for every 45 acres of woods. We now know that populations can be sustained at considerably higher levels if adequate food is provided through logging and pastures. We have sustained populations at five times this level on wildlife management areas and have reason to believe that populations at ten times this level are possible with supplementary pasture plantings.

The southeastern United States has an unfathomed potential for production and harvest of deer. Without the limitation of winter cold and snow, it is likely that the upper limit will be established by food and disease. And where food supplies are augmented by management to provide adequate nourishment, the threat of disease diminishes. Information at hand indicates that disease usually becomes operative as a decimating factor in conjunction with malnutrition. There are of course a few cases where this has not been so, but even here there is little to certify that disease was **induced** by overpopulation.

When considered from this standpoint, the deer production potential of western North Carolina counties becomes almost astronomical when compared with today's deer populations. If we can sustain populations of one deer per 10 acres on the rough mountain lands composing our wildlife management areas, think what populations can be produced in the more fertile privately owned lands surrounding them. Some measure of the contrast between present and potential deer populations may be deduced from a recent study which showed that average north Georgia forest land produces usable deer browse at an average annual rate of 40 pounds per acre.

In contrast, the average maintained permanent pasture produces about three tons of hay, which at 20 percent moisture content computes to about 15 tons of green forage. If, for the sake of conservatism, we assume only 33 percent utilization, we have five tons or 10,000 pounds of usable deer food per acre. Thus, the average pasture produces at least 250 times as much food per acre as the average forest.

This can be translated into numbers of deer thusly: the average deer requires about five pounds of green food per day, or 1,825 pounds per year. On this basis it would take 45.6 acres of average forest land to support one deer. But a single acre of good pasture land can produce enough food to support 5.48 deer. If 20 percent of the herd is harvested, we can compute that each acre of pasture will produce one harvestable animal. As indicated above, the meat market value of this animal would be about $36, but its recreational therapy value would be over $300. Thus, an acre of pasture may be considered to produce $300 per year in deer hunting value.

This same acre of pasture could produce about 400 pounds of beef per year (assuming about 85 percent utilization of 15 tons forage and a conversion factor of 25 pounds of grass to produce a pound of beef). This 400 pounds of beef at 20 cents per pound has a market value of about $80.

This contrast in values justifiably raises questions in regard to comparative income potential from forestry and wildlife management and "highest" land use. Let us for a moment consider a rich poplar cove growing quality sawtimber at the very high rate of 400 board feet per acre per year. At $40 per thousand, this would be $16 per acre per year. Thus, when considered on a per acre unit basis, production of deer for hunting compares very favorably with production of timber or beef or other crops.

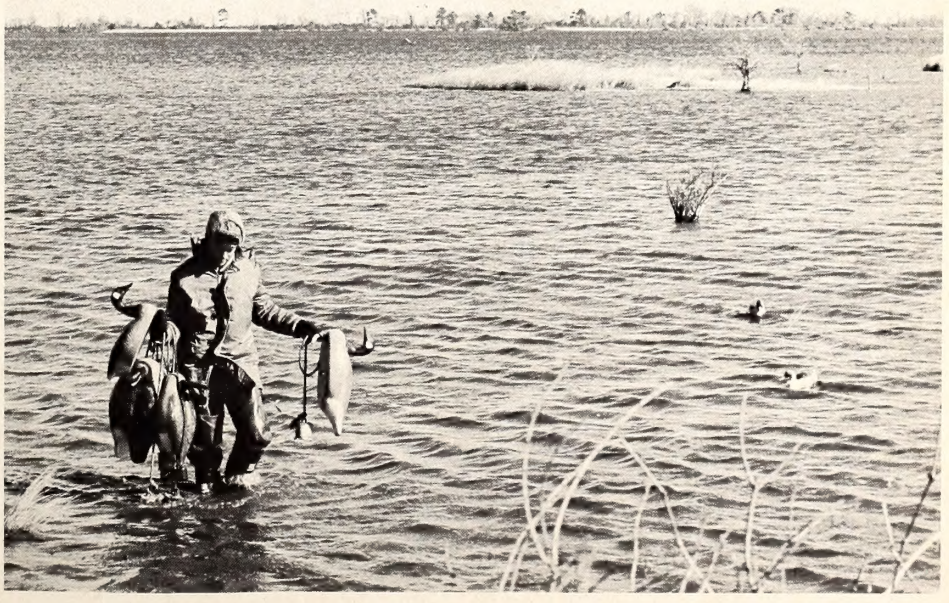
Computation of deer production capacity on an extensive county-wide basis would have to be more conservative since we would be involved with about 70 percent forest cover. The average North Carolina county covers about 311,680 acres. If we assign 11,680 acres to cities, roads, and railroads, we have remaining 300,000 acres of potential deer range which, at a very conservative 20 acres per deer would support a population of 15,000 animals. (We say this is a conservative figure because much of the cleared land is in pasture and widely scattered through most counties.) Considering an annual legal harvest of 20 percent, we could take 3,000 animals per year. At $300 value per deer taken, the herd could produce an income to the county of $900,000 per year. How many counties in North Carolina can afford to pass up a chance at an extra million dollars a year?

And the interesting aspect of this potential income is that it would not require the outlay of large sums of capital from either private or federal sources. The major requirement would be a change in attitude toward wildlife, an increased appreciation of its value, and cooperation in its protection.

Similar value and development po-

Many people can profit from wildlife. This waterfowl guide is only one; the motel operator, restaurant proprietor, gasoline station attendant—all may profit from an abundance of game and fish.

Joel Arrington



tential can be demonstrated for waterfowl in the eastern part of North Carolina. We have an abundance of natural habitat which, if properly preserved could serve to hold large wintering populations. These wetlands could continue to serve as hunting territory, but there is reason to believe that they could pay off in larger financial returns by serving as reservoirs to supply birds for nearby draw-down type shooting ponds.

In a similar manner, hunting opportunity can be created for quail, wild turkey, grouse and other game species. Wildlife has always had a substantial aesthetic value, but its commercial value is only now coming to the fore. There is no reason why this commercial value could not be used to good advantage in our war against poverty. Indeed, it is especially appropriate that such use be made, since some of our most serious pockets of human poverty exist in remote rural areas best suited to wildlife production. These benefits are especially accruable to those most in need since they can serve as guides. But landowners and business people also stand to gain substantially.

The Tools Needed

We have painted a glowing picture of untapped potential, and perceptive people will see and appreciate this potential. The big question, however, is: How do we get this thing started? What is the magic formula which will create abundance in place of scarcity?

At the outset we indicated three general basic needs, some of which required expenditure of effort and others of which required only that we **refrain** from certain kinds of effort. We indicated that to produce wildlife we must have wildlife habitat and that one way to preserve wildlife habitat is to keep from breaking it into smaller and smaller pieces with more and more roads. Another way to preserve it is to refrain from draining it where wildlife-productive wetlands are concerned.

The second basic need to help wildlife produce more abundantly for North Carolina is to reduce illegal drain by strengthening the protection program. A specific proposal in this direction would be providing wildlife officers authority to establish wildlife check-points on secondary roads, especially in hunting territory. At such check-points officers would have authority to check vehicles for possesion of illegal game and this would serve as a very strong deterrent against illegal hunting. Such authority is provided in about two-thirds of our sister states and is very effectively used.

Wildlife check-points established by uniformed officers at random locations and in coordination with other law enforcement agencies, could raise no question of infringement of freedom, except of course the freedom to violate the game laws. This procedure would be especially effective when applied in conjunction with organized local effort to increase game populations. It would also be especially effective in curbing illegal wild turkey hunting, which in some localities may be the primary reason for low populations of this magnificent game bird.

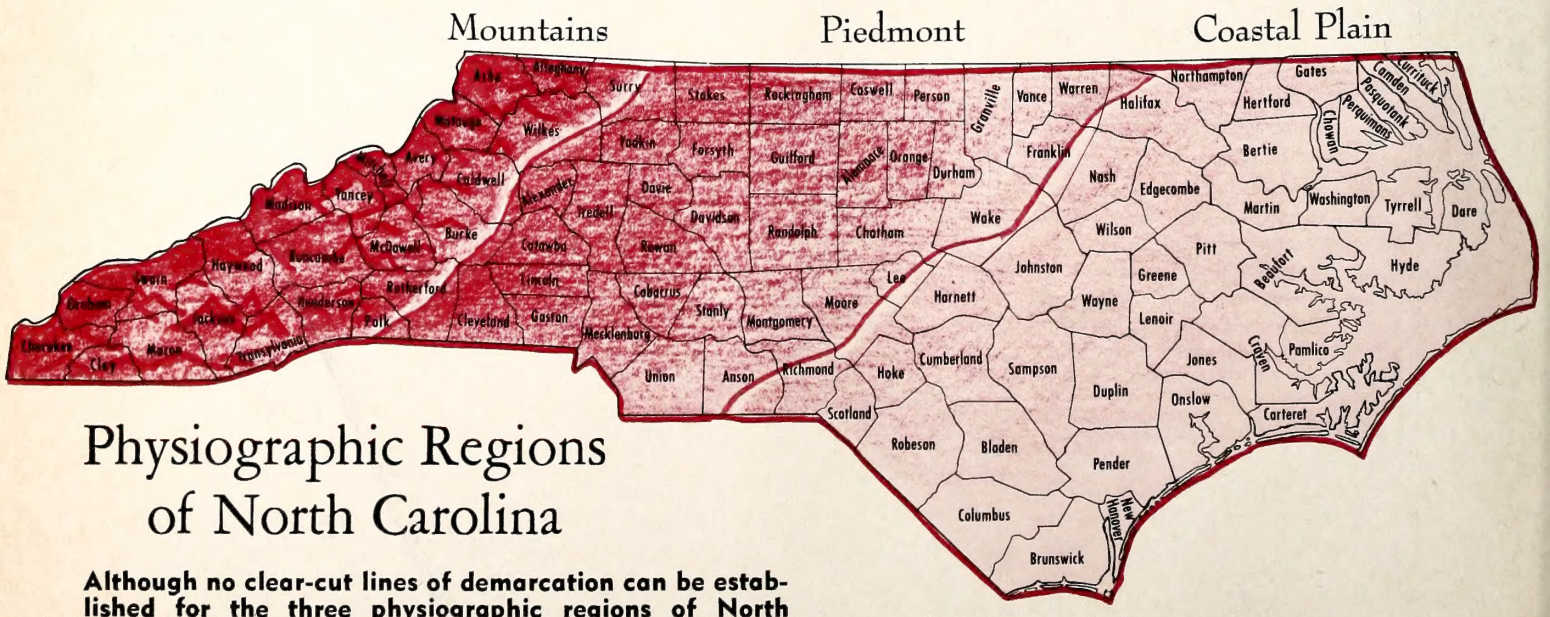
Another basic need in the field of protection is more effective control of stray and free-running dogs. To a large extent this is a matter of public education and cooperation. Communities with effective stray dog control are well on the way to game abundance. Such action would be especially effective in sections adjoining wildlife management areas, since there could be an immediate overflow of game from the management areas.

Expansion of dog control by wildlife officers could be considerably advanced by designating all U. S. Forest Service lands as game refuge for purpose of dog control. Also it might be practical to consider application of such protection on areas of private land if they were of sufficient size (10,000 acres or more) and in one contiguous block. If this approach appears to be successful and protection is assured, the next step would be to consider restocking where such appears to be necessary.

Such program expansion and increase of hunting opportunity would of course require some materials and personnel beyond what we now have in the Wildlife Resources Commission. One way to keep expansion on a pay as you go basis, however, would be through the sale of big game hunting stamps, as is done in many other states. A further advantage of such stamps could be return of stubs to provide a more accurate estimate of how many big game animals are harvested each year and where. This additional information would help pinpoint restoration effort in areas where it is most needed.

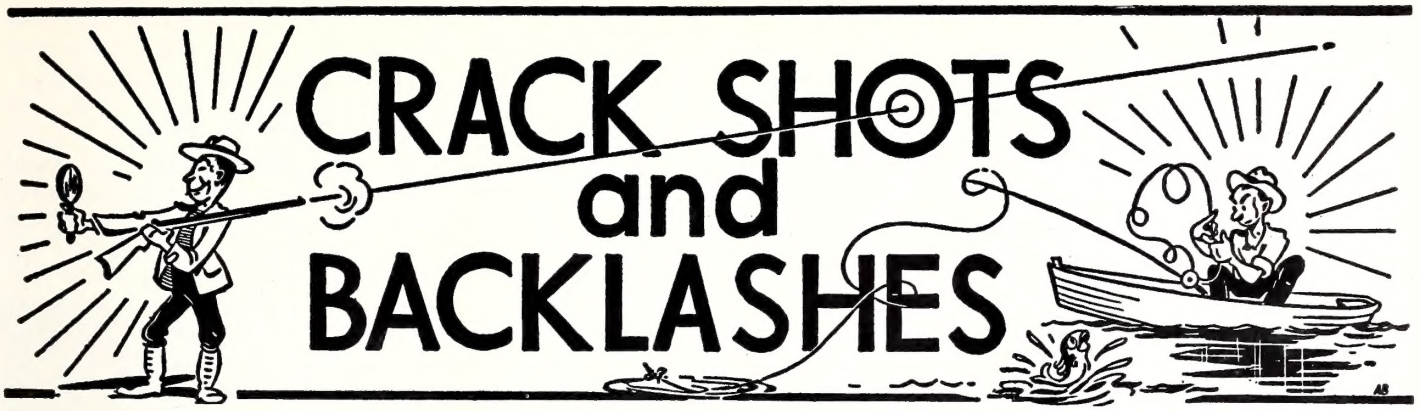
In Summary

Wildlife has a very substantial commercial value which can be effectively used to improve the economy of depressed areas. Implementation requires preservation of habitat, expansion of protection authority and expansion of hunting opportunity. Program expansion can be kept on a self-sustaining basis by sale of big game stamps. The primary requirement, however, is public demand and local support.



Physiographic Regions of North Carolina

Although no clear-cut lines of demarcation can be established for the three physiographic regions of North Carolina, this map pictures the areas usually designated as mountains, piedmont, and coastal plain.



DEPARTMENT OF LETTERS TO THE EDITORS, FIELD NOTES, AND ITEMS OF INTEREST

Conducted By Rod Amundson

If you look at the label on this or next month's back cover, you may notice that it is of a different color and a different style of printing. Since last April, *Wildlife* has been in the process of changing some 85,000 names on our mailing list from metal stencils to IBM cards. Under this new automated system we expect to process new subscriptions and renewals more quickly and efficiently.

During this transition period mistakes are bound to occur, both human and mechanical. We hope that you will bear with us until all are corrected.

It will be helpful to us, as well as to you, if you will enclose your address label when you renew your subscription or make a change of address (see bottom of page 23). When your subscription is due to expire we will notify you two months in advance. This will help us in keeping records and make it less likely for you to miss an issue.

More on Martins

DEAR SIRS: I would appreciate very much any information you can send us concerning the martin bird. My husband and oldest son have recently put up what they call a martin pole. It is very high with four small, heavy strips attached to the top of pole, each holding several gourds carefully made to keep rain out. Only one hour up and we had a martin family. I wish every one could see this beautiful sight.

We have a lot of curious viewers that don't know what it is. My husband and son have planned to make more of these poles as soon as they can raise some more gourds.

We are located a mile north of Spring Lake, on highway 210 on the right from Raleigh. This information is for any of you that may be down this way. MRS. J. L. SMITH. SPRING LAKE

Jack Wilson of Gastonia wrote an interesting letter on this subject in our May issue. We hope you have plenty of visitors, both feathered and human. —Ed.

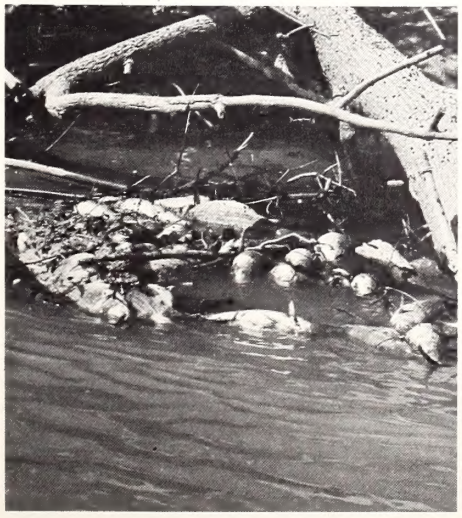
Silent Spring?

DEAR SIRS: I read an article in the St. Louis Post Dispatch, pertaining to insecticide poisoning of blue birds in Missouri. This caused me to hearken back to an article which appeared in an earlier issue of Wildlife, about blue birds becoming scarce in North Carolina.

Also another article appeared in another paper, about insecticides proving detrimental to fish in ponds and rivers.

Do you not agree that something should be done to curb this menace to birds and fish? It could even prove to be injurious to people as well, especially if they should eat fish having been subjected thereto. ROMEY E. BUTLER, ST. LOUIS MISSOURI

So much publicity has been given to over-pesticization recently that people are becoming more aware of the problem to exercise more caution in the use of various pest control poisons.—Ed.



Teacher's Pet

DEAR SIRS: I've enjoyed your magazine for many years. Now I want to become a full-time reader. As a subscriber from Connecticut recently wrote, what a bargain!

Your magazine presents a problem in our home. It's impossible to save the old copies intact. Both my wife and I are teachers and she finds countless applications in which your beautiful pictures can be used in primary education. We do not really request a solution to this "problem" inasmuch as the double advantage makes the magazine even more useful and enjoyable.

Keep up the excellent job of turning out one of our state's most prized publications. KENNETH C. NORTON, REX

Frog Mystery

DEAR SIRS: While visiting Camp Daniel Boone, a Boy Scout Camp, in Haywood County yesterday I observed something I had never seen nor heard of before.

In the shallow water along the shore of the lake I noticed many large dead frogs. These frogs were all spotted in color. Many of them had a white substance protruding from their mouths, while others had their abdomens burst or torn open.

Further observation noted that there were many of these spotted frogs with a smaller dark olive-green frog on their backs. These dark frogs had their front legs firmly wound about the neck of the large frogs. Many of the dark frogs appeared to be attached to the large frogs even though they were dead.

I picked up one of the pair of attached frogs and found that it required a very strong pull to release the legs of the green frog. The large spotted frog was still alive but was barely able to swim away after being released.

We would appreciate any information that you might be able to give us concerning this condition. R. K. BUTLER, M.D. DIRECTOR HAYWOOD COUNTY HEALTH DEPARTMENT, CANTON

We cannot shed any light on the

subject except to point out that frogs are extremely tenacious during the mating process, and suggest that human beings had something to do with the burst abdomens and other evidences of mortality.—Ed.

Music of Nature

DEAR SIRS: Our class wishes to express our enjoyment in listening to the article in the April issue, entitled "Gobbler Count." In our recent study of conservation, we read many stories about the ways used to protect our natural resources, and especially our wildlife. We found this particular article most impressive in the writer's true love and reverence for the wonders of God and Nature. Thank you MRS. LANCASTER'S FOURTH GRADE, J. W. COON SCHOOL, FAYETTEVILLE

Cover Source

DEAR SIRS: My husband takes your wonderful magazine and we both enjoy it very much.

In a recent issue of Wildlife I noticed that someone wanted a print suitable for framing of your cover picture for that issue.

Your covers caught my eye years ago when I was still in art school. I love to paint them in oils. As a matter of fact, I am now painting your December, 1963 cover, "Yates Mill," near Raleigh.

If any of your other readers are interested in my doing a cover in oils for them for a very moderate cost, I would appreciate your referring them to me. MRS. ROBERT A. CRADDOCK, BURLINGTON

Gun Laws

DEAR SIRS: The resolutions passed by our Wildlife Resources Commission opposing further state or federal restrictions on the right to bear arms deserve the support of all of our citizens.

This action by our Commissioners is most timely and they have stated the case extremely well. I am proud of them.

If you can spare the space why not print the laws of our state regarding firearms. I for one would appreciate this service.

I have enjoyed your excellent magazine for many years and I wish it continued success. T. E. CAMPBELL, HENDERSONVILLE

Laws pertaining to guns other than rifles or shotguns are so complex and confusing that it would take several issues of a magazine like this to print them all. They range from federal to state law and municipal ordinances.—Ed.

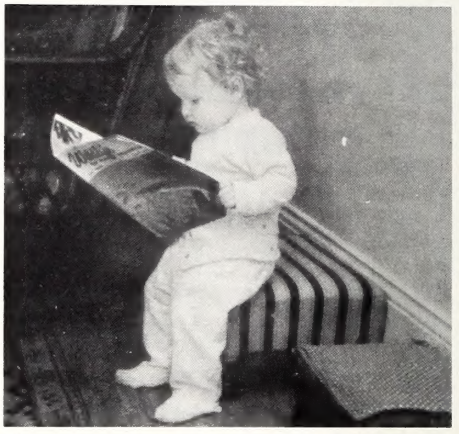
Lizard Name

DEAR SIRS: I have a lizard at my house; he's blackish-brown with light stripes on him. He also has two white stripes, one on each side and a blue stripe down the center of it's tail. If you could give me any information on what kind of lizard this is, please let me know in an early edition of Wildlife. VERN PARK, RALEIGH

From your description this sounds like it is a five-lined skink. The blue color in the tail disappears in older specimens.—Ed.

Starting Young

DEAR SIRS: While taking my granddaughter to visit her great-grandparents (James Walton, Concord, N. C.) she picked up a copy of your magazine and I took the enclosed snapshot of it. We decided



that since she has such good taste we would subscribe! Our subscription is enclosed. MAJOR JAMES M. HUGHES, HAMPTON, VA.

Pistol Packin' . . .

DEAR SIRS: I have just read your latest issue on Nature's Dilemma, and I liked it. I wish you had more on snakes. More information and pictures.

There have already been three killed on our street. A mother up the street has the record in Cape Carteret. She alone last year shot 16 snakes with her .38 pistol.

The reason I want this article printed is because many people in the new housing vicinity don't know what snakes are poisonous or harmless. RODNEY MAY, CAPE CARTERET

Shoo!

DEAR SIRS: On my bird feeders I am getting about 90 per cent sparrows. I feed small cracked corn and bread crumbs and peanut butter. The sparrows come in droves, how can I get rid of them. J. T. DAVENPORT, SANFORD

At the risk of sounding like Abegail, we'd suggest stop feeding the birds. Seriously, English sparrows are not protected by law and may be destroyed in any legal manner.—Ed.

Wildlife Conservation Career Leaflet Offered

Parents, teachers, counselors, and young men and women seeking information about scholastic preparation for study of wildlife conservation and for career opportunities in that profession will be interested in a helpful leaflet now

Amid the miracles of electronic tabulating and bookkeeping machines which keep the Wildlife Commission on an efficient keel, is a wooden gadget that cost but a few cents to make, but which holds the key to converting Wildlife's mailing list.

available from The Wildlife Society.

Called "A Career for You in Wildlife Conservation," the leaflet outlines the main preparatory aspects and opportunities for professional workers in wildlife biology, management, research, education, information, enforcement, and recreation. Single copies are available free from the Society at 2000 P Street, N.W., Washington 6, D. C. Special rates also are available for quantity lots.

An organization of wildlife and fisheries workers in the United States, Canada, Mexico, and other countries, the Society seeks to establish and maintain high professional standards among biologists, to develop wildlife management along sound biological lines, and to improve public understanding of the needs and values of wildlife, fish and associated resources.

Joel Arrington

Where to this month? It's a big lake, yet most of it is less than 10 feet deep. Its origin is in doubt but it has been around a long time. The above view is from the north shore, the site of a State Park. The fishing is quite good at times, and waterfowl and shore birds use it frequently. Give up? Lake Phelps.

Feathered Friends

DEAR SIRS: Last month our Thalia Jr. Garden Club, of which I am counselor, made the bird feeders and nests from plastic Chlorox bottles as presented in February issue of Wildlife. I must say I have never received more enjoyment than the past few weeks watching the different birds attracted to this type feeder. It works wonderfully, and so easy to make at no expense. My little 9 year old can make them without any help. We hung the feeder low on a pine tree right off our sunporch where we can easily watch the birds. We have seen red-winged blackbirds, titmice, black-capped chickadees, towhees, purple grackles, English sparrows, white throated sparrows, pine siskins, juncos, mocking birds, cardinals, brown thrashers, and wrens.

But listen! Yesterday was wonderful. I saw a bird for the first time in my life I had never seen before, and I could hardly believe my eyes. It was the evening grosbeak, your cover picture for February. How odd!

I thought your back cover idea brought to realism your front cover. I immediately did some research and the World Book says they are rather rare, especially in this country.

If this one issue of your Wildlife Magazine (which I borrowed) from a friend can encourage bird conservation so well, the other issues, I feel, must be tops also. This and our Virginia Wildlife are my main source of information, in teaching conservation of birds and animals to our young Junior Garden Clubbers.

I forgot to tell you also that an old opossum likes our feeder too. We have seen him in it at night stealing the food.

Again, thanks for such a "neat" idea, and I'll be looking forward to the next issue of Wildlife in North Carolina. MRS. D. D. GOFF, VIRGINIA BEACH, VIRGINIA

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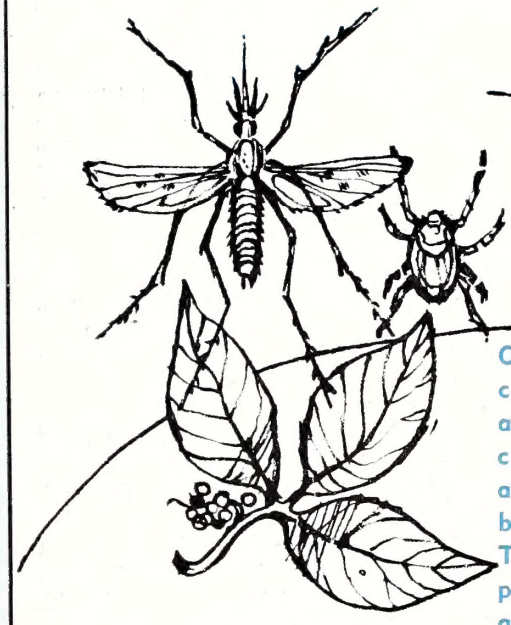
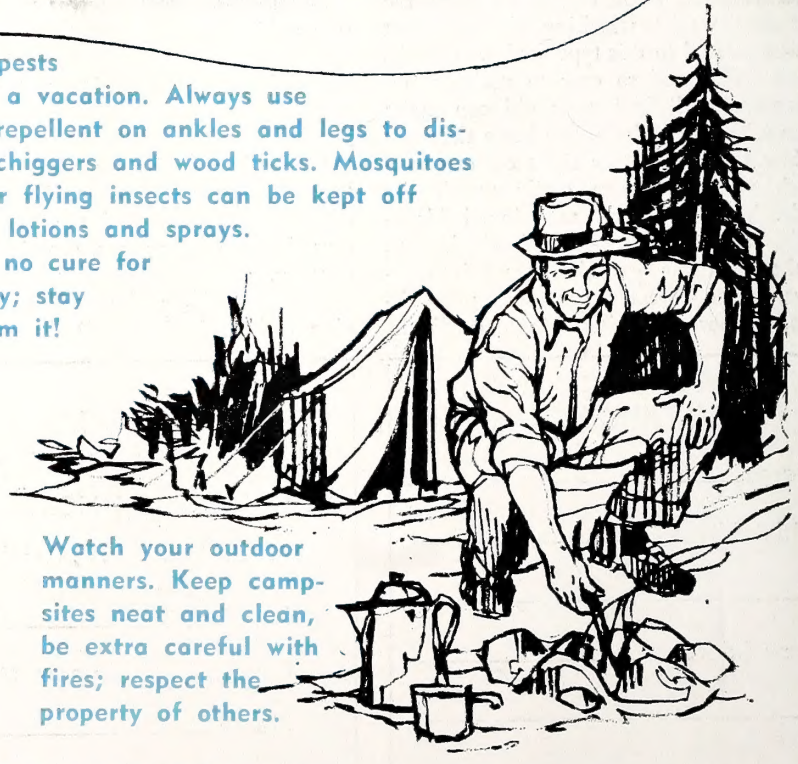
SUMMER VACATIONS

Use some water wisdom if your vacation includes boating or swimming. Have your boat safely equipped and don't take chances.

For better fishing during your vacation, hit the lake or pond at dawn. Night fishing can be productive too when summer's heat fires up.



Outdoor pests can ruin a vacation. Always use a spray repellent on ankles and legs to discourage chiggers and wood ticks. Mosquitoes and other flying insects can be kept off by using lotions and sprays. There is no cure for poison ivy; stay away from it!



Watch your outdoor manners. Keep campsites neat and clean, be extra careful with fires; respect the property of others.

FOR MORE FUN OUTDOORS THIS SUMMER, PLAY IT SAFE!

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Wildlife in north carolina

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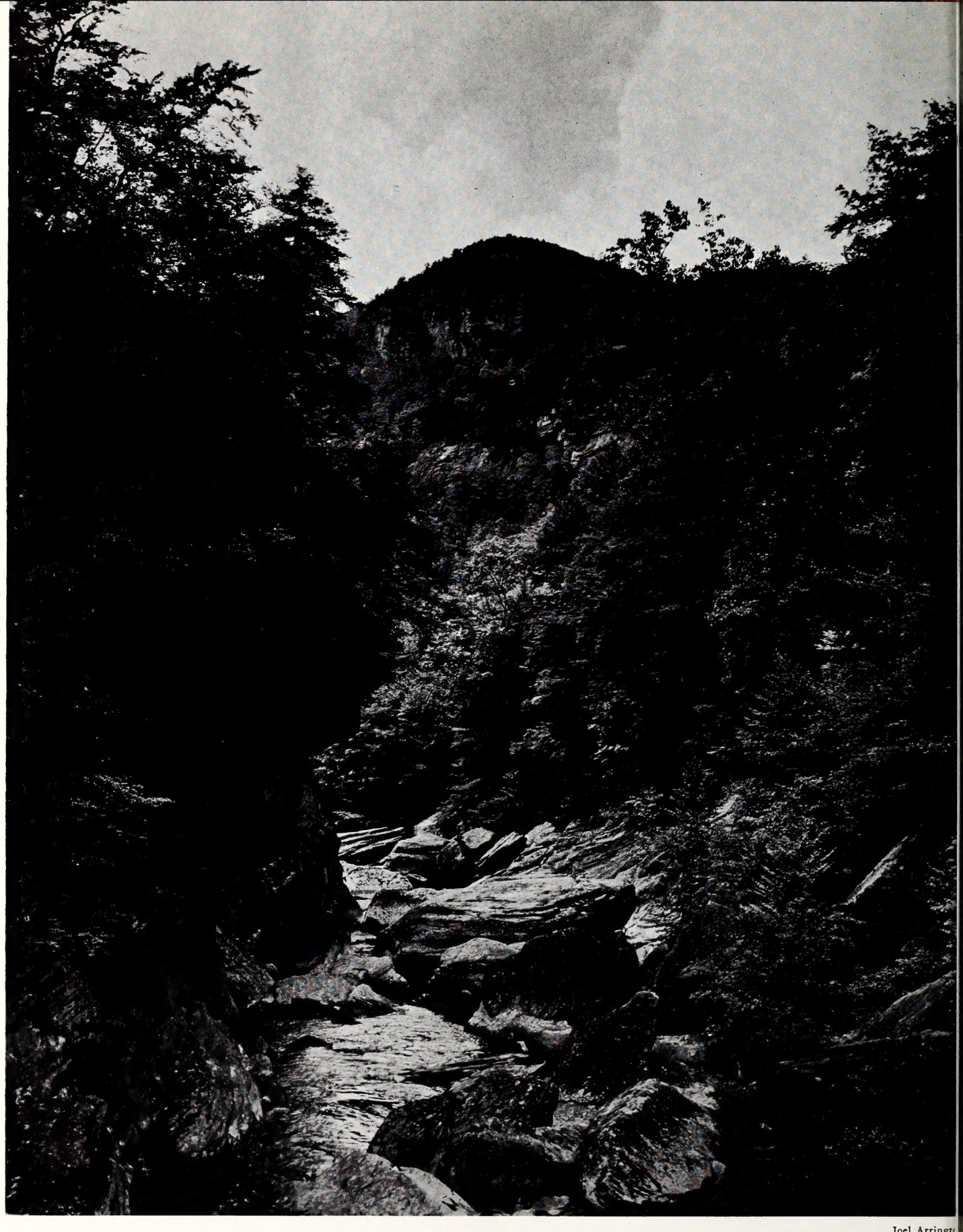

Joel Arringt

Wilderness

This is a spot along Linville Gorge, and they don't come much wilder than this. Are such wild areas worth protecting? This is up to you. Increasing pressures for "recreation" sites may soon push roads into areas which are now "roadless." Wilderness has its place.

Wildlife in north carolina

The official publication of the NORTH CAROLINA WILDLIFE RESOURCES COMMISSION, Raleigh. A monthly magazine devoted to the protection and restoration of our wildlife resources and to the improvement of hunting and fishing in North Carolina.

State of North Carolina

TERRY SANFORD
Governor

North Carolina Wildlife Resources Commission

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LUTHER PARTIN.....Writer-Photographer
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COVER

There are lots of fish that hit harder, jump higher, and fight longer than the largemouth bass, but few have a larger, more devoted army of followers. A five-pounder is a good fish, but ancient warriors of more than 12 pounds have been taken in North Carolina.

Color ranges from almost black through blue-green to pale, silvery gray. They are found in every county of the State, and adapt themselves to varying habitats. Painting by Duane Raver.

WILDLIFE IN NORTH CAROLINA recognizes the need for close cooperation between State and Federal conservation agencies and the people who hunt and fish—to bring about a restoration of our renewable resources. The Editor gratefully receives for publication news items, articles, and photographs dealing with the North Carolina out-of-doors, but reserves the right to reject materials submitted. Full credit is given for all materials published.

* * *

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The Place of Law Enforcement In Conservation

by Ernest Swift

Reprinted from NATIONAL WILDLIFE FEDERATION "Conservation News"

FOR the past decade, and even longer, some sycophants employed in high places in conservation agencies—state and national—have consistently down-graded law enforcement as a tool of game and forest management.

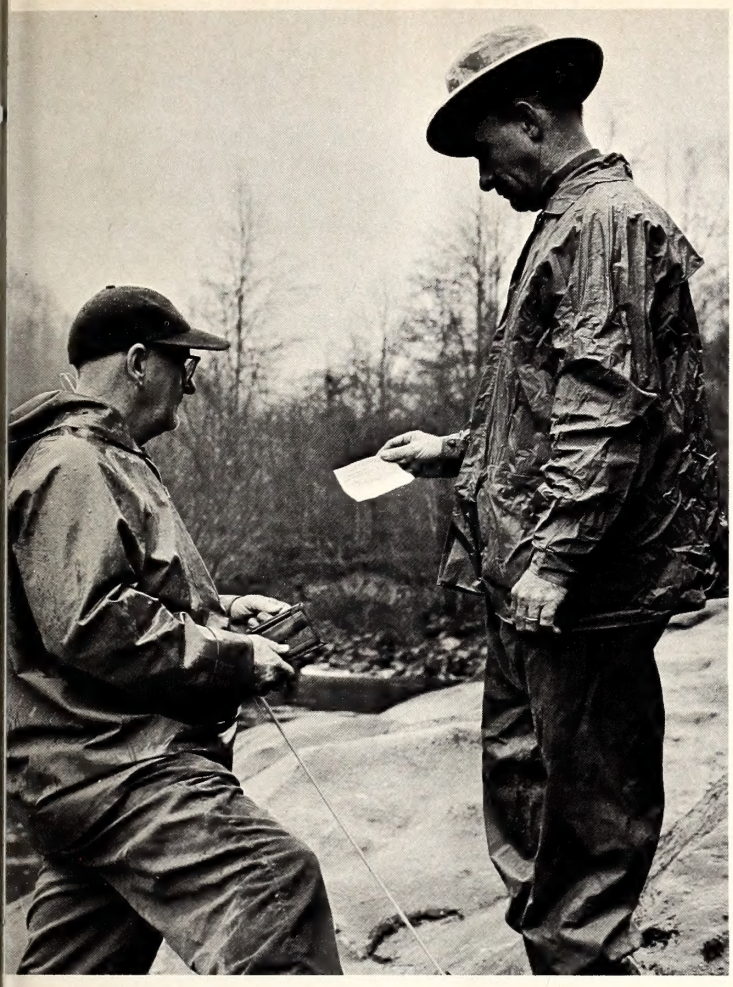
In this enlightened age of conservation morality, law enforcement is sometimes characterized as a throw-back to the first primitive endeavors and jungle survival. It is further evident that fewer men with enforcement background are successfully assaulting the portals of high administration.

In regard to the preservation of game a few reminders are of vital significance.

The elk and moose of the Alleghenies disappeared long before there were any extreme convulsions of habitat disturbance; historians do not relate the demise of the passenger pigeon to habitat destruction; the elk herds of Illinois, Iowa, Missouri and Wisconsin were killed off prior to any violent land-use changes; there was still plenty of buffalo grass when the last remnants of the once vast prairie herds were rounded up for museum specimens; and the effort just sixty years ago to protect the already diminishing waterfowl came long before drainage was a major contribution to their destruction.

The decimation or complete destruction of the above-named species during the times cited was not a matter of habitat, but too few laws and no enforcement. What few game laws that surreptitiously crept into the statutes were scorned as the idle dreams of sentimentalists. With wildlife

Wildlife protectors are first and foremost, law enforcement officers, charged with the vital responsibility of seeing that the fish and game laws are obeyed. North Carolina is fortunate in having a highly efficient Protection Division.



Fishermen and hunters often select stormy days to pursue their sport. Refuge Manager Earl Sanders checks a fisherman.

and forest destruction in the U. S. almost catastrophic in the latter part of the 19th and beginning of the 20th centuries, it was only natural that stricter laws and their enforcement received first attention as conservation measures.

If it had not been for forest fires, millions of acres of the nation's best timberlands would be growing a sturdy second growth today, but general carelessness and settlers' fires destroyed much of this potential just as the settler's gun wiped out game populations. It was not until the fear of a timber famine—together with an attempt to recreate an economic base for bankrupt forested areas—that fire prevention became an actuality. Along with improved equipment to fight fires, the laws of arrest and the collecting of damages for setting fires plus strict prosecution played an important part in forest rehabilitation.

In the various stages of exploitation, farming had to develop beyond the subsistence era and become big business with its attendant impact on the land before game habitat was fully appreciated. In fact, subsistence farming was advantageous to species such as prairie and sharptail grouse. It was law enforcement and not habitat that increased the deer populations in many farm and ranch areas, and it was forest fire protection creating ideal browse conditions—although for only a limited number of years—plus enforcement which produced high deer populations in many wooded regions.

To sustain the game populations which are now demanded and to regulate the kill in relation to millions of hunters, there must be an intelligent emphasis on both habitat maintenance and the enforcement of game laws. There is a saying in some quarters that law enforcement never raised a pheasant or a deer, but under present-day conditions habitat alone has never sustained desired populations. Both management and enforcement must be blended and intelligently understood from the field to the main office.

Law enforcement is still an important part of forest fire protection and always will be, and the advocates of pollution abatement contend that there will be little success unless punishment is meted out to those who would make our waterways open sewers.

But today there are administrators and far too many would-be planners and advisers who have had no enforcement experience, do not understand its importance, and therefore, have little sympathy for it. They consider it rather a messy business, dealing with defense attorneys, or granting favors to political hacks. They would skirt the courtroom as a rather crude holdover from the antediluvian beginnings of conservation.

Anyone of experience knows that hunting and fishing are only two segments of total recreation today, but they are mighty important segments according to statistics. License fees are still the financial backbone of most state game departments, and without enforcement, budgets would be pitifully small; and without the police powers of the states and the Federal Government in protecting lands from fire, some of the nation's finest recreation areas would be nothing but blackened rampikes. Nor will fishing waters be maintained without enforcement of the pollution laws.

Some decades ago many of the old time wardens were convinced that game abundance came about through enforcement. In their time, before there was so much habitat de-

Wildlife Patrolman C. B. Spain, communicates with circling patrol plane. These men use modern equipment and methods.

struction, they had a right to think so. But today many of the younger breed of enforcement men are graduates of game or forestry schools, or receive in-service training on both management and enforcement.

In spite of all this, enforcement agents are too often classified with the Neanderthal man, because it takes a certain kind of individual courage, both intellectual and physical, to succeed. A field warden or a forest ranger can't operate within the committee system or simply be an organization man if he is going to accomplish his job. He has to make many decisions right on the spot, and when in the field, he is the entire conservation department to the public.

As a part of the picnic table conservation philosophy being advanced, the modern warden is too often being schooled in the Pollyanna approach and instructed to devote part of his time in taking people on bird walks or to pick flowers like Ferdinand the Bull. Application to the job does not mean a hard-boiled approach; the public is entitled to courteous treatment and intelligent answers and, unquestionably, there is a vast amount of public relations which all field men can engage in. It is more important than ever before, and with personnel of good scholastic background much can be accomplished by working with conservation groups, professional organizations and schools.

But after all the preaching is over and much profession of high public ethics, the warden and ranger still have to remain somewhat earthy and at all times realistic. Let no one forget that there still is, and always will be, a hard core of organized commercializers who are stealing the public blind, and there are too many citizens who do just a little game stealing when in the field. Collectively their thefts total a sizeable amount nation-wide, but many of them sit in the front row at the local rod and gun club meetings. This will continue so long as game runs wild and fresh fish swim upstream. Most wardens know this—too many sophisticated planners would have one believe that all but a small minority that go afield are the epitome of human nobility. They never had to trail some professional game killer through the sewers of bloody greed, or face a forest fire that turned their "innards" to water. Nor is the day of timber stealing entirely a thing of the past.

This soft attitude is reflected in many avenues of our national life today; in many of the more serious types of lawlessness, in school discipline, juvenille delinquency, and general moral degeneracy. It seems to be the coming American pattern of our national life.

Running the gamut of states there are still many degrees of attitudes toward game law enforcement, but there is a consistent trend to subordinate the man with the badge. On the national scene, Congress should be complimented for its interest—somewhat belated—in attempting to save some remnants of the nation's wetlands, for more space for wildlife, and support of better law enforcement through increased funds. However, game agents would appreciate more definitive proof of support for their lonesome job within the ranks of their own administration.

Protector Lincoln Long cruises a mountain reservoir. Protection Division personnel are trained in water safety and stand ready to assist boaters in case of emergency.

Making Safe Hunters

by Luther Partin

GUNS are built for one specific purpose—to kill. When we give or permit a youngster to use a gun, we are placing in his hands a lethal version of a toy he has most likely been playing with since he could crawl. Much of his play probably involved pointing an authentic scale model of a sleek modern firearm at his friends, pulling the trigger and yelling "bang, bang, you're dead." If he were more fortunate than some, his model might give off noise and smoke and eject a plastic or rubber projectile to bounce off the body of his playmate.

In addition to the years of playing, he has probably, during the same period, been watching cowboys and Indians and cops and bad guys shooting all over the place via T.V. and movies. It really should not come as a great surprise when he hurts himself or someone else when he's turned loose with the real McCoy. With such instincts as the average kid today has developed toward guns, how can he make an instantaneous transition from a toy to a weapon of destruction without killing someone in the process? It would probably be very disturbing to know, and voluminous if reported, how many accidental near-misses result with firearms each year. Records are kept on the incidents involving injury or death, but no report is required for tragedies that almost occur.

The National Rifle Association can be credited as being one of the first organizations to recognize the situation as being serious, but one that would respond to education. Through the auspices of the NRA, thousands of people throughout the country have been trained as Hunter Safety Instructors. These qualified instructors are available for teaching young and old shooters the points of safety in gun handling, as well as gun care and marksmanship.

A good example of service to youth and the community is being demonstrated by the Dortches Ruritan Club. This civic group is giving moral, physical and financial support to the Dortches NRA Junior Rifle Club. Besides organizing and supporting the club, three Ruritan members are certified as NRA hunter safety instructors and serve as the training staff.

Under the guidance of Club Leader Worth Snipes of Route 3, Rocky Mount, youngsters from the surrounding community are participating in both the Hunter Safety and Junior Marksmanship programs of the National Rifle Association.

The Hunter Safety Course is designed to promote safe gun handling and reduce hunting accidents. It presents information concerning the operation of guns, proper gun handling, good shooting and the hunter's responsibility. The marksmanship program includes a 15-stage marksmanship course, with special safety training for young hunters.

After completing the Hunter Safety Course, the Dortches Junior Club members are eligible to begin marksmanship qualifications. They can use a small rifle range in Mr. Snipe's backyard under his supervision, and, at scheduled meetings, the range facilities of the Rocky Mount National Guard Armory are available.

It is really enlightening to see the professional manner in which the boys handle and shoot a rifle. They not only observe the rules of safety in gun handling, but, after a little training, can shoot a tight pattern on the range.

Hunter Safety training in North Carolina is coordinated by the Wildlife Resources Commission. If you are twenty-one years of age or older and would like to become a certified NRA Hunter Safety Instructor, or if you are interested in having a hunter safety program organized in your area, contact John R. Parker, Jr., Outdoor Safety Supervisor, Box 2919, Raleigh, North Carolina, or the nearest wildlife protector.

There are approximately 350 certified NRA Hunter Safety Instructors registered with the Wildlife Commission. These volunteer workers are available to assist church, school, civic, or youth groups whose objectives include preparing youth for safe, responsible citizenship. This is a great opportunity for guiding youngsters safely through the transitional period in becoming hunters and sportsmen.

Club leader Worth Snipes points out the rear sight mechanism on a .22 rifle to two future hunters. It is work such as this that will help make hunting a safer sport.

Where to Fish

II-Piedmont

by Duane Raver

RUNNING northeast-southwest across about the middle third of North Carolina, is a rolling to almost flat area that is known as the Piedmont. In reality, this general term covers a lot of territory and some quite varied terrain. And, as you might suspect, plenty of fishing water of varying types and grades. It is this broad expanse of the state in which we will wet our lines this month.

Although this chunk of North Carolina has acres and acres of water to fish in, practically none of it is "natural", or placed here by nature. The rivers, however, on which the large reservoirs have been constructed, and the creeks and tributaries on which the farm ponds have been built, were here long before man decided on impoundments.

It is with these three basic types of water—flowing streams, large reservoirs, and farm ponds—that we will be dealing in this section.

Most of the flowing waters in the Piedmont have several problems in common which limit fish production and, at times, hinder the fisherman. One is turbidity: topsoil washing off the land into streams making living conditions for fish a bit unpleasant to say the least. Fortunately this source of trouble is being corrected, primarily through the efforts of the Soil Conservation Service, and the farmers themselves. Perhaps some day it will be minimized to the extent that it no longer will present fish production with added difficulties.

Another problem felt by many Piedmont streams is chemical and sewage pollution. Progress is slow in cleaning up our Tarheel waters, but it is being made. Presently, there are major streams which have drastically limited fish production because of industrial or municipal pollutants. Yet, in spite of these conditions, most streams in the midlands of North Carolina produce surprisingly good fishing.

Although those portions of the Catawba, Yadkin, and Cape Fear River systems which are considered to be in the Piedmont are pretty well harnessed by one impoundment after another, the portions in between the reservoirs have fairly good populations of catfish, (particularly white catfish), white bass, panfish, and the usual run of rough fish. It is likely that the catfish and other rough fish such as carp, quillback, suckers and the like, support the bulk of the "inter-reservoir" angling. Now to the fisherman who is used to bass-bluegills-walleyes, this falls far short of good fishing. But when the habitat of these situations simply won't, at present, support better, the nongame fish should be utilized.

This is particularly true of the Yadkin system, where actually more "stream" exists between the lakes. The channel catfish is present to some extent also and certainly should be taken. Without pinpointing any spot, we can generalize a bit on the catfish angling. One problem is to gain access to the

Jack Dermid

Many of the Piedmont river sections between the large impoundments have good fishing for catfish. Try the deeper holes.

river stretches. The spots available may be somewhat restricted and even then able to accommodate only a few fishermen at a time. Yet once you locate an entry to the river, a catfish "hole" should be nearby.

All the catfish are much more active at night than during the daylight hours, although the smaller members of the family—the bullheads—often bite right through the entire day. But if it's the channel or white catfish that you're after, it is best to figure to lose a bit of sleep in the process. This means locating the spot while there's plenty of light and getting set up in the late afternoon. The "spot" may consist of a large tree which has fallen into the stream, a slick-water pool, or a wide bend that has an undercut bank. Check for water more than six-feet deep.

Since you may be bothered by snags in the deep water, your tackle may have to be heavier than the size of the catch warrants. Some "cat" experts built their own rods of substantial cane poles and strap heavy-duty reels to them. Twenty-pound test line is none too much to save hooks and sinkers. Of course, more sport is yours with medium-weight spinning tackle.

The fish may run from a pound to as much as ten or twelve, so a number 3/0 hook is none too big. If the current is moving at a good pace, an ounce sinker is usually needed to hold the bait in the deep water. Catfish baits range from a couple of fat earthworms threaded on the hook to a four-inch lively minnow. In between, there are many commercial preparations that depend on their strong odor to attract the catfish. Perhaps one of the best (but a mess to use) is coagulated chicken blood. It is prepared in such a way that it is of a rubbery consistency and cut in strips an inch or so wide and maybe three or four inches long. This is threaded on the hook (either a single or treble hook) and will stay on for several casts or until a nice catfish picks it up.

More easily obtained and far cleaner to use is the large earthworm or night crawlers if available. It becomes apparent that the catfish isn't particular what he eats, and once you find them, a variety of baits may work.

Sections or spots to remember: the Yadkin River near Yadkinville, the South Fork of the Yadkin River near Cooleemee, the Pee Dee River above and below Blewett Falls Lake, the Cape Fear River below Buckhorn Dam near Corinth, and the Neuse River in Johnston County.

Stream surveys of the Wildlife Commission's fishery biologists a few years ago, pointed up some small streams that had good to excellent fish populations. Not rough fish either, but pickerel, crappies, robin, bass and other game fish. It was in these tributary streams—some mighty tiny—that they discovered brush-lined pools, bubbling riffles, undercut banks, fallen-tree shelters and such. Water conditions play an important part in successful fishing here, and clear water is by far the best.

Since most of these little tributaries ramble through rather dense vegetation—blackberry bushes, alders, etc., a very short spinning rod is an advantage. Of course, natural bait, especially the earthworm, is hard to beat here, but a tiny nickle or gold spinner fished with a steady retrieve will take a wide range of the fish present. You are more likely to run into robin and chain pickerel than anything else.

The point is, in the Piedmont particularly, don't pass up any stream as "too small"; the place to start is with the tributaries of the upper Neuse River.

Some of the best stream fishing in the Piedmont is the seasonal fishery in lower portions of most of the larger rivers where shad and striped bass come to spawn. Since most of this is actually in Coastal Plain sections we will wait till next month to look into this fine angling.

Switching from the lesser known fishing in the running waters of the North Carolina midlands to the more popular reservoir angling, we find plenty of impounded water to choose from. We left off last month at about Lake James on the upper Catawba. It is an "in between" lake that fits many of the qualifications of a mountain lake, yet has some of the habitat of a typical warm-water reservoir. This means that we find a wide range of species here and varying angling conditions. The fabled Linville River bubbles into the lake, pouring in a good bit of real cold water, yet trout aren't one of the lake's strong points.

Lake James is a might pretty place to fish, and at times, can be an excellent fish producer. Best times: April, May, early June, October. Best times of day: midday in early spring, dusk and dawn late May and June; night, midsummer. Fish most likely to be caught: largemouth bass, smallmouth bass, walleyes, bluegills, crappies, and other smaller sunfish. Productive methods: popping bugs around edge where there are trees in water (this will depend on water level); minnows, night crawlers off points for bass and walleyes; minnows deep for crappies. Surface lures at times for night fishing. The mouth of the Linville River is often excellent for walleyes in the early spring. The coves may be best for largemouth bass until the water warms up.

Rental boats are available at several points scattered over

There should be good fishing ahead for this angler as he puts his boat in at the Canal Bridge area on Lake James.

the lake, and the Wildlife Commission has four fishing and boating access areas for free public use (see page 12, July **Wildlife**). Although some bank fishing is profitable on Lake James, a boat and outboard motor will help greatly in covering the reservoir.

Motels are available both on the lake and in nearby towns. Camping facilities for tents or trailers are scarce, and no organized camp grounds are available.

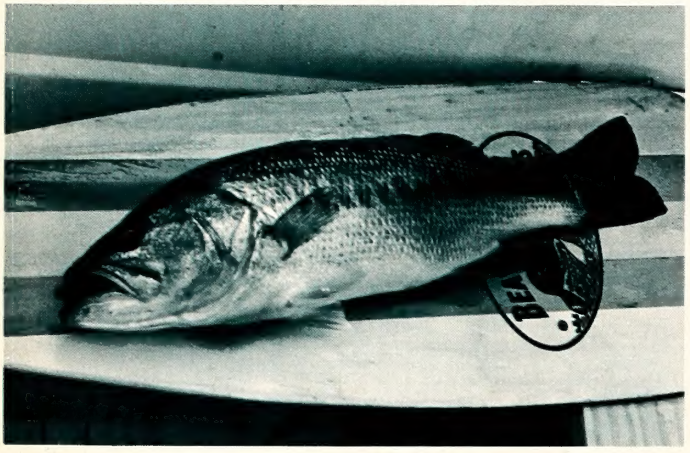
Bypassing Lake Rhodhiss simply because of magazine space limitations (the lake has good fishing) and looking at Lake Hickory, we find one of the most consistent fish producers in the state. Other reservoirs have quality fishing during the colder months, but Hickory seems to come up with strings of fish right through the winter. A turbidity problem

is present some of the time, but when the water is reasonably clear, you generally can count on a mess of fish.

Best times: late February to early June. Best times of day: midday during cold weather, dawn and dusk later. Fish most likely caught: crappies, largemouth bass, robin, bluegills, and catfish. Productive methods: casting the black worm into the shallows early in the season; minnows and small jigs deep for crappies; trolling deep with "bomber" type plugs during the summer.

Rental boats are available on the lake and the Wildlife Commission has two fishing and boating access areas on the lake, one near Highway 127 bridge, two miles north of Hickory, and one in Catawba southwest of Oxford Dam.

Again skipping down the Catawba past Lookout Shoals (which can be red-hot for white bass), we come to sprawling Lake Norman. The immediate fishing future looks bright indeed for Norman, which already in its young life has gained quite a reputation for some mighty good fishing. During the early part of this year, many of the fish were small, but as



Although Lake Norman has its share of larger bass, the 1964 season saw a lot of bass like this 14-incher, come aboard.

the season wears on, the bass are picking up, and, although it is still an unknown quantity, Lake Norman is "on its way."

Best times: not established for sure yet, but likely April and May. Best times of day: dawn till 8:30 a.m., dusk till 10 p.m. Fish most likely caught: largemouth bass, crappies, bluegills. Productive methods: black worms, wobbling plugs near submerged brush; minnows and small jigs for crappies.

Several well-equipped marinas offer boats and motors for rent, and many of the roads ending at the water's edge provide suitable boat launching. Fishing camps and motels are available.

Mountain Island Reservoir is more on the order of a meandering, slow moving river, and is rather long and narrow. We will brush by it in our haste to cover other sections, but the fishing can be quite good.

Lake Wylie (until the last few years, Catawba Lake) we share with South Carolina and it is noted for consistently good bass fishing. Best times: late March to early June; late September through October. Best times of day: midday early in the season, dawn and dusk later on. Fish most likely to be caught: largemouth bass, white bass, bluegills, catfish. Productive methods: early season fishing for bass, jigs and weighted black or red worms; midseason, surface lures late evening and daylight, deep-running plugs and live bait off points and in deep coves. White bass, spinners and small jigs near mouths of incoming streams; watch for schools of shad near the surface.

Plenty of rental boats are available all around the lake. One access area is maintained by the Wildlife Commission here; this is at Wither's Bridge.

High Rock Lake, the uppermost reservoir on the Yadkin system, seems to have "come back" the last few years, from the rather poor fishing of the 1950's. This impoundment has been plagued (as others have) with overpopulations of crappies to the point that only very small ones were taken. Two primary methods have been used to attempt to correct this: the introduction of walleyes to crop off the small crappies; the introduction of threadfin shad to help supply more food. The walleyes have yet to establish themselves and perhaps won't due to water conditions not quite to their liking. But the threadfin shad have been successful and the size of the crappies seems to be improving.

Best times: late March to early June. Best times of day: afternoon until hot weather, then twilight hours. Fish most likely to be caught: crappie, largemouth bass, white bass, bluegill, carp, catfish. Productive methods: jointed plugs around the edges early in the year, plus reflex spinners for white bass; surface lures dawn and dusk near brush or shelter along banks, deep trolling during midsummer; crappies, shallow to very deep, minnows and small jigs. A few boats are available on the lake, and the Wildlife Commission has two boat launching sites on the reservoir. Boat launching can be a problem when the water level drops drastically.

Badin Lake is rated by many as one of the top fishing spots in this section. It pays to "know" this lake, and we will have to pass it by this time.

Right below Badin is Lake Tillery which furnishes some excellent fishing in this area. It is similar in one respect at least, to the other impoundments in this chain: the fish are a bit hard to locate, and they are simply where you find them.

Best times: Late April to mid-June; October. Best times of day: early morning. Fish most likely to be caught: white bass, largemouth bass, bluegills, white perch and crappies. Productive methods: white bass, reflex spinners near the mouth of the Uwharrie River and up this incoming stream for a mile or so; shallow-running lures for bass, early spring, much deeper as the hot weather takes over; casting into schools of shad on the surface during the summer.

Small boats are available at Morrow Mountain State Park in the upper portion of the reservoir. This scenic park also has cabins and tent and trailer camping sites available.

The downstream reservoir of the Yadkin system (the river is called the Pee Dee here) is Blewett Falls. Perhaps its greatest claim to fame is the "tail water" fishery—that fishing in the stream just below the dam. There isn't much to slow up striped bass from the ocean until they hit the Blewett Falls dam. The spring fishing here is worth a try, but it would be well to check with officials at the dam before getting too close to the structure.

The lake itself has quite a water level fluctuation but does have fair populations of game fish and plenty of catfish.

Kerr Reservoir is quite a place. The chances are that more fishermen have come away dissatisfied than have returned home happy from Kerr in the last five years. Without going over the history of this big impoundment, let's simply say that fishing was spectacular for the first few years, and has been less than spectacular since. Yet there can be no doubt that Kerr Reservoir has a good fish population and that those who stick with it catch some nice fish.

Best times: black bass, March to June; striped bass, late March and again in early June. Panfish, no particular time except crappies in May. Best times of day: early morning. Fish most likely to be caught: largemouth bass, striped bass, channel catfish, crappies, bluegills, chain pickerel (few). Productive methods: black bass, early, black worms and jigs very near the shoreline; midsummer, trolling deep (30 to 40 feet) with plugs. Striped bass, early, casting large jig or spoon into schools (may school up in midsummer and work shad); midsummer, deep trolling with large plugs or wobbling spoons. Try about 200 feet off some of the long points.

Unless you've pinpointed a good fishing spot in a large reservoir, trolling may be your best bet. The scene here is a striped bass expedition in Kerr Reservoir waters.

Boats and motors are available at several points on the lake. Literature and maps of most of the North Carolina area of the reservoir can be obtained from the Kerr Reservoir Development Commission, Route 3, Henderson, North Carolina, or the Reservoir Manager, John H. Kerr Reservoir, Boydton, Virginia.

Downstream some 10 miles from Kerr Dam is the beginning of Gaston Reservoir, the newest of this chain. It is hoped that it will have a stabilized water level which will fluctuate very little under normal operation. It is just now coming into its own, fishing-wise.

Best times: March through May, October through November (could be good in midwinter on warm days). Best times of day: dawn and dusk. Fish most likely to be caught: pickerel, largemouth bass, crappie, bluegill, striped bass, catfish. Productive methods: live minnows around road culverts and bridge pilings; spoons and spinners near shore.

Boat rental operations are being developed and several are furnishing limited numbers of boats now. Three fishing and boating access areas are in the planning or development stage by the Wildlife Commission.

Roanoke Rapids Reservoir, below Gaston, has never measured up to the earlier success of Kerr, although it is furnishing some fine fishing. Best times: April and May; October. Best times of day: dusk. Fish most likely to be caught: bluegills, crappies, largemouth bass, walleyes, catfish, striped bass. Productive methods: live bait (minnows) fished at various depths depending on season; black worm in shallows (early season) for bass; popping bugs, crickets for bluegills.

It is best to bring your boat and motor here and use one of the semi-public launching sites or the Wildlife Commission's area near the little settlement of Thelma.

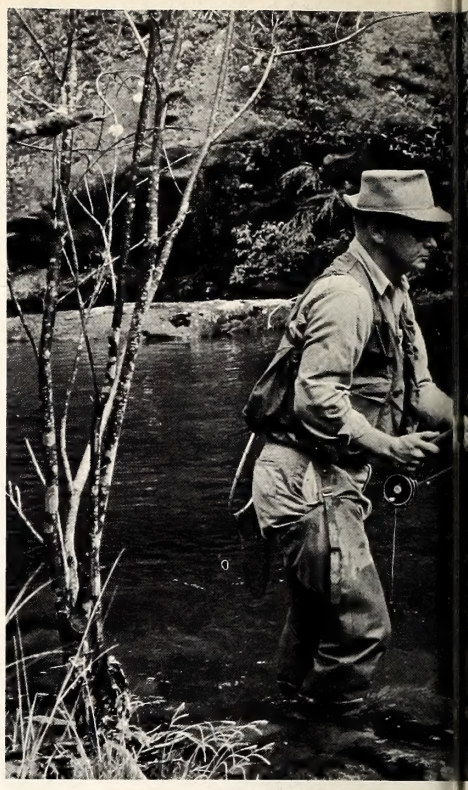
So far in quickly scanning the Piedmont fishing possibilities, we have yet to look at about 20,000 acres of fishing water—some excellent, some only fair. Where is this large measure of angling? Right in your backyard in the form of farm ponds. Some Piedmont counties have as many as 1500 ponds from puddles to several acres. It is here that some of the state's most consistent fishing is to be found. Since most of the ponds are on private land, permission to fish may be a bit hard to come by. Check with your local Soil Conservation Service representatives or County Agent for possibilities.

Lumping all these bits of fishing water together and continuing our thumbnail sketches it might go something like this: Best times: April, May and early June; late September, through November. Best times of day: midday, early season; dawn and dusk, midsummer. Fish most likely to be caught: largemouth bass, bluegills, redear sunfish, crappie, warmouth. Productive methods: fly fishing, popping plugs, and wet flies; black worms, minnows, spinners. Fish deep with crickets or worms during midsummer.

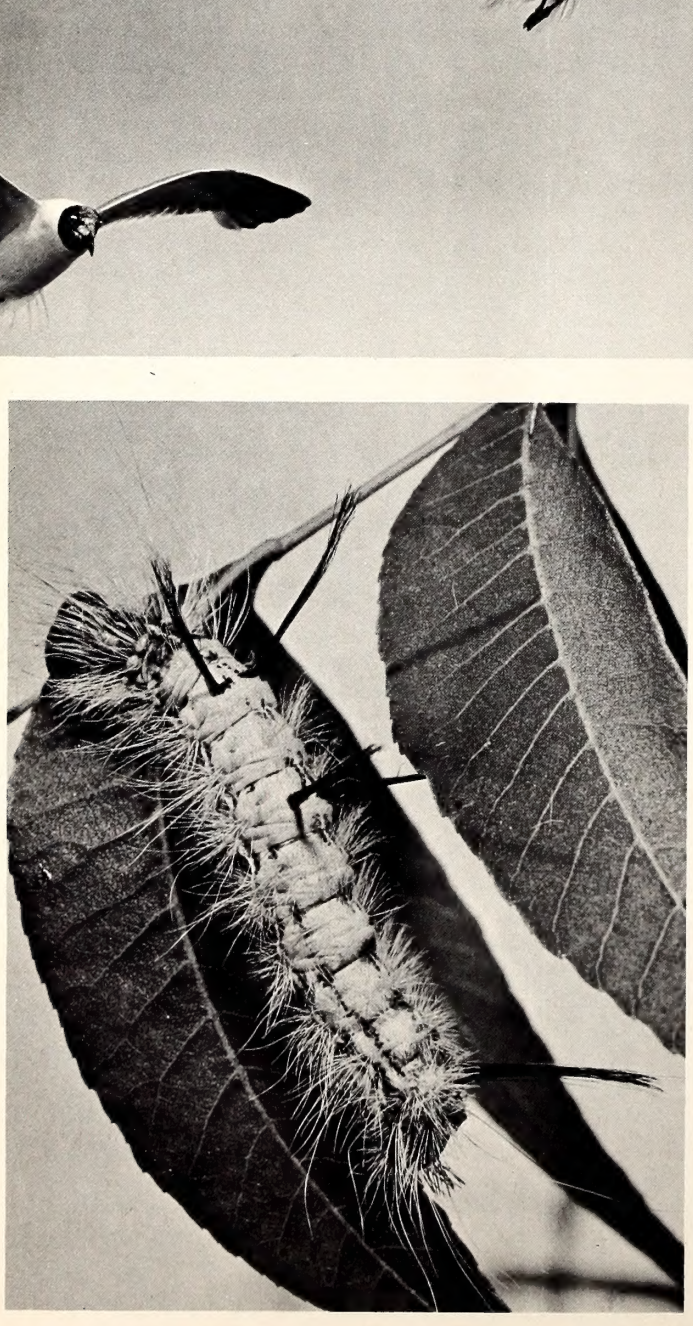
The end of a perfect day on a Piedmont farm pond. Some of the best fishing in this region is available on these smaller bodies of water. This is nice string of bluegills.

It's been quite a trip, hasn't it? Plenty of Piedmont water that we've missed, and that we did mention certainly deserves more attention. But we've got to hurry. Next month, the bountiful Coastal Plain and all its fine angling.

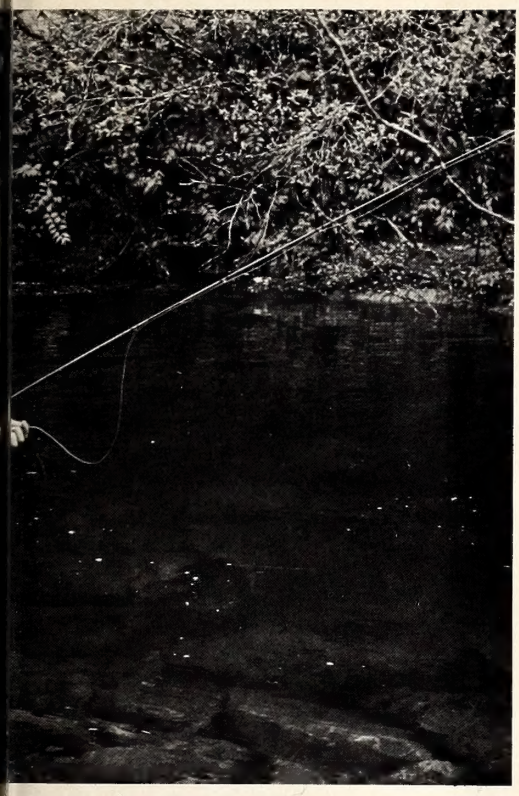
Summer Scene



No Tarheel summer scene would be com
plete without the laughing gull (left) of th
coast. Nature provides the trout fisherma
above, with the air-conditioning from
mountain stream for an August cooler.



This American dagger moth caterpillar (left) often leaves red welts on the skin of its handlers. Let's hope that such uninvited guests don't interrupt the peaceful summer scene of the lakeside campers.



Sun, surf, sand—a combination that fits into any summer scene. But add "safety" to this too. Don't swim alone or in water that is unfamiliar. And by the way, you're getting a bit pink around the shoulders.

These young red-winged blackbirds have arrived a bit late on the summer scene.

So it's not all "just one big fish after another." Even the bountiful sea can have an off day now and then. This lady watches the foamy surf and waits . . . and waits. A twitch of the line . . . then a tug; see it?

The Decision is Yours

by John R. Parker

THE work of man never ceases. An attempt to enumerate the good that has come from most of this work would be as trying a task as the actual accomplishment of these deeds. As man advances and strives for goals that are, in many cases, to great and to far in the future to truly define, he continues to change the face of the earth. The new things that he creates are most always considered better than the preceding ones. New inventions, modes of transportation, buildings or just plain gadgets often astound the people of today as black powder or new tools for the field amazed those that came before us. Today's man lives longer, goes places faster and has more time to play with more objects, but is probably not much different than the fellow who wanted a better plow. Today's man is still awed by migration, spring, mountain tops, and stormy seas.

Someone said that man spends most of his time moving things from one place to another. While this reaction proceeds, never to completion, there is something that always catches the brunt of the attack. The advance comes on all fronts and the attacker never runs out of supplies.

The assaulted is man's environment. The assaulter is man himself. On many fronts the original environment has lost, it has disappeared and with it some of those other creatures that were intended to share the space with us.

This business continues, as it must. And as it continues, so dwindles the quiet places, the places for enjoyment and the places of stored wealth. The old scars heal slowly and new ones are always appearing. The task confronting conservationists is not altogether something that came on the scene last year or even fifty years ago. As early as the mid-nineteenth century there were many befouled rivers, ruined forests and depleted game and fish supplies. Some of this has been restored.

The face of the land continues to change. Great cities grow together to form even greater ones and the green that once separated them is bulldozed under. Rivers cease to flow as before and their migrating fishes meet concrete. Beach dunes are leveled for houses and the sea often finds the weak link. Great wetlands, only a small amount of which is actually needed for agriculture, are vanishing and great hardwood forest that are slow to recover from clean logging are replaced by faster growing types.

The most astute student of conservation cannot seriously disclaim the good of man's great labors and achievements, which have cut deeply into Nature's storehouse. But he and other concerned citizens know that the once abundant resources are in need of protection or complete restoration if possible.

The people of our state, of our country, are not now and never will be satisfied with the status quo. It is normal that people want to clear, to build, to prosper and to make changes. However, when we gain from these efforts, a better way of life, we often lose something else of value. In many cases that with the greatest value to all people is lost only to be discovered too late.

Too often the efforts of man appear as one great paradox. While one group of Americans struggle to obtain a few acres of wetland for waterfowl, another group of Americans announce a desire to drown 10,000 square miles of similar habitat behind a gigantic dam. One group endeavors to save one particular tree while others who make their living from trees go about their harvesting with little thought of the future. There are many such examples.

It would be too much to hope that we could all pull together for the same cause all of the time. If ever there is a time when people should work together, it is when we are dealing with irreplaceable resources or resources that are restored only at great cost and after many years. More and more thinking people are beginning to realize that we must preserve out natural surroundings, for they are almost as vital as the air we breathe. Man will not be satisfied to live in a completely artificial world.

Man's great endeavors will, rightfully, neither stop nor slow. Of this we can be sure. Just as certain, the lands that are in our keeping will not grow or stretch. They remain the same. This then is the problem, the crisis. Wise use and a proper amount of multiple use can do much and some resources are renewable but these relatively new terms cannot work magic. A concerned and interested public can, however, put action into them and achieve great things.

There is an immediate need to preserve certain types of wildlife habitat; there is a growing need for more recreational areas; there is a need to preserve places of natural beauty; and there is a need to clean up much of our living space and keep it clean. And since these challenges cannot be met by a few, there is a need for more people to realize these needs in the first place. If we do not do what is needed now, we will slowly but surely deprive ourselves of the great and abundant heritage of which we so often speak and we also will steal from future generations that which is rightfully theirs. No one can force the issue on you. There will be a great deal of gentle persuasion but the final decision is yours.

NORTH CAROLINA WILDLIFE

RESOURCE-O-GRAM

A ROUNDUP OF THE LATEST WILDLIFE NEWS

Hunting, Combination Licenses on Sale

Hunting and combination hunting-fishing licenses went on sale at license dealers throughout the State on August 1. This means that these licenses expired July 31. Following are license fees as established by the General Assembly: State resident $4.25; Combination $6.25; County $1.65; Nonresident $20.00; Nonresident six-day permit $15.75.

Open Seasons Dates for Dove, Marsh Hen, Woodcock

You won't find these dates in your copy of the North Carolina Hunting Regulations. These dates, just recently announced, are set long after the non-migratory game rules are established, and are distributed as a separate list. Write the Wildlife Commission for this sheet.

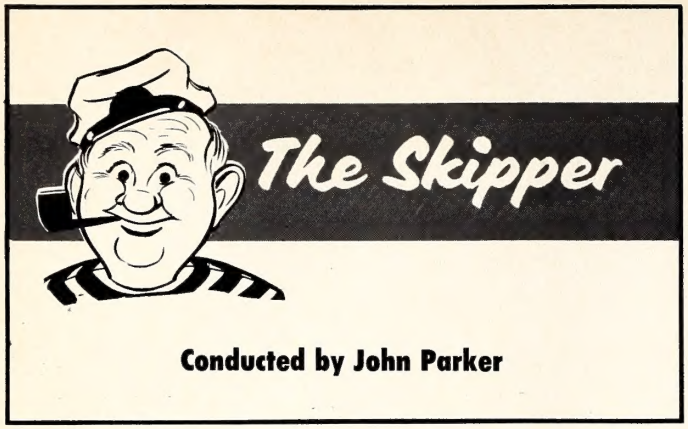
Managed Hunt Regulations Available

A postcard to the Division of Game, Wildlife Resources Commission, Box 2919, Raleigh, will get you a copy of the 1964-1965 managed hunt regulations, now available in booklet form

Hunter's Choice Deer Season

Landowners and sportsmen wishing to recommend either-sex deer hunts in their localities should file requests with the Wildlife Commission on or before August 10. Such hunts will be allowed on privately owned lands, and as in the past, on the basis of local requests.

Upon receipt of requests the Commission will investigate local situations to determine whether deer populations warant the taking of anterless deer. If this is found to be the case a public hearing will be held near the area being purposed to determine local sentiment in regard to the proposal. Such hearings will be held during the week of August 31. Results of these hearings and other findings will then be considered by the Commission in time to make an announcement of approved areas and dates during the week of September 21. Either-sex deer hunts scheduled this year will be held during the month of December.



Conducted by John Parker

ONE not familiar with the geography of our state would only have to glance at a map of coastal North Carolina to surmise that here is, truly, a place to find boats and boating. It would take only a quick second glance at the large lakes and inland rivers to determine that here too is a place for boats.

North Carolina is a great boating state. Its boaters have the choice of gliding from cove to cove in a mountain reservoir, winding down an inland stream, or searching for schools of hungry blues and mackerel while kicking up blue-green spray.

Since the days when this land was first settled, its people have shaped strong, seaworthy boats from choice pine and oak. In the early days boats were used primarily for work or transportation. Today, boats serve us in work, but it is recreational boating that has changed the picture. The transition took a few years to get started, but once it did, things really started moving. Boating as we known it in 1964, especially outboating ,is relatively new.

Naturally a great state for boating has a large boating population. Ours continues to grow. In such a state you would also expect to find boat builders, and in North Carolina you will not be disappointed. Helping meet the demands of the nation's boaters are boat builders—modern and traditional. And in addition to choice oak and pine, the North Carolina boat builder has begun to use another excellent material, fiberglass.

Let's take an "alphabetical look" at the state's boat builders. Our survey did not reveal an "A" builder, however, it did reveal a lot of "grade A" or quality boats.

First, in the "B's" is the Barbour Boat Works, Inc., of New Bern. These folks have been builidng boats since 1932. They also do heavy marine repair and salvage. The Barbour fleet includes models from 15 to 26 feet long. All are made of wood and are of lapstrake construction. Luxury interiors and special finishes are available. A Barbour boat can be powered either by outboard, inboard-outboard or inboard up to 250 horsepower. In addition to the standard flared bow semi-v models, 17 and 20 footers are available in the new "deep-v" design. Their line includes runabouts, hardtops, and cabin models.

The Carolina Boat Company of Lumberton produces plywood boats for fishermen. Twelve, fourteen, and sixteen feet are the lengths available. Cypress and oak are used for framing. One of the models includes a live bait well. Carolina boats are suitable for fishing and utility use. One model features square end construction, and all are finished with quality marine products. The company is now turning out about 700 boats a year.

Mr. W. L. Caudle of McLeansville says that popular demand for his fishing boats forced him into full-time boat making in 1950. Although he has built larger craft, his present line now includes a 12-foot fishing skiff with fiberglass seams that is priced at $75, and a larger and sturdier 14 footer. The larger boat, says Mr. Caudle, is sold mostly to boat liveries for rental purposes. Mr. Caudle speaks of his company as a small organization that puts quality and a reasonable price before quantity.

Commodore Boats, Inc., was established in 1956. This New Bern company also makes camping trailers and has a contract for repairing government vessels. Commodores are available in a variety of lengths ranging from 14 to 35 feet. Marine plywood and mahogany are the woods used in the lapstrake construction. Their line includes "deep-v" models. Also in the new "deep-v" design is a 22-foot fiberglass.

Dixie Boat Works was started in 1952. Their first boats were racing outboards. Today the company has a complete line of fiberglass boats from 14-foot fishing skiffs to 23-foot day cruisers. One of Dixie's runabouts includes, among other equipment, carpeted flooring and bucket seats with a storage console. Interesting features in their 15-foot, 8-inch fishing boat is a back-seat storage compartment, middle-seat live bait well and an anchor storage well in the front seat. Dixie Boat Works is located in Newton.

The average North Carolina boater is certainly not in the market for a head boat, but if this be the case, Mr. J. T. Gillikin of Harker's Island is the man to check with, Gillikin Boat Works specializes in the 65-and 85-foot head boat which is, of course, used for commercial fishing. Their boats carry up to 75 passengers. Some of Mr. Gillikin's line are now in use in New York. Another boat in the Gillikin line is the 55-foot Sport Fisherman. This type of boat is used primarily as a charter boat and is usually built to accommodate up to six people for off-shore fishing, or Gulf Stream trolling. Mr. Gillikin says that he uses heart pint for the frame and juniper and mahogany for planking. Outfitting depends upon the owner's preferences.

The Hatteras Yacht Company can turn out four boats a week at its sprawling High Point plant. In the spring of 1959, Willis Slane conceived the idea of making a fiberglass sport fisherman and doing it 200 miles from the sea. Today his 200 employees are involved in a multi-million dollar business. First launched in March, 1960, Hatteras boats are now available in 34- and 41-foot models. The 41 footers is made also in a double cabin model. Both models of the 41 footer accommodate six persons.

The Schafer Manufacturing Company of Statesville makes three models of fiberglass fishing boats of open construction. Utilizing honeycomb sandwich construction, the Schafer boats require a minimum of upkeep and are very strong according to Mr. J. R. Schafer, the owner. The 13- and 14-foot boats have been produced by Schafer for six years. These boats are available in white or green and the color is permanently sealed in the fiberglass. This fishing boat will take motors up to 25 horsepower.

Mr. T. N. Simmons has been building boats since just after World War II and now with his son in the T. N. Simmons Boat Shop, he builds a truly traditional boat. The Simmons Sea Skiff, modeled after the old Banks dory, is available in four styles, one 18, and three that are about 20 feet long. This boat takes rough water in stride and Mr. Sim-

mons says he has customers from the Great Lakes to the Gulf. Unlike most outboards the motor of the Sea Skiff is inside in a motor well. This allows the builder to make a high transom which keeps out those following seas and the white water of the North Carolina inlets and shoals. The Sea Skiff is made of wood and is, of course, of lapstrake construction. A Simmons boat can be purchased painted or unpained and can be equipped as desired.

Three generations of boat building experience are behind the M. W. Willis and Sons Boat Works of Marshallberg. The Willis Sport Fisherman is 40 feet long and her hull is of heart pine and cedar. Built primarily for deep sea fishing, the Willis Craft has profited from these hearty souls who go out regardless of the weather. With clipper bow for seaworthiness the boat can be purchased fully equipped. Price depends upon engine selection.

Other popular boat companies whose information was not received in time for this writing are: G and W Boats, Inc., of Greenville; Sampson Boat Company of Clinton; Shoup Boat Corporation of Ahoskie; Victor Industries of Forest City; and Hi-Tide Boat Works of Harkers Island.

There they are, from boat shops to boating corporations and all continuously endeavoring to provide better boats for North Carolina.

There are, no doubt, other individuals and companies that turn out boats at least occasionally. If we have failed to include one in this brief treatment, it was not intentional. **Wildlife in North Carolina** would be appreciative of information on builders not included.

Boat Trailers

If you desire to haul your North Carolina-built boat on a Tarheel-built trailer, you can do that too, as there are several boat trailer manufacturers in the state. This is no place for a chicken or the egg discussion, so let's simply say that most of us would **not** be up one of those well-known creeks if it were not for the modern boat trailer. The boat trailer serves us in one of two basic ways. Either we trail the rig to our water-front hideaway at the beginning of each season and leave it, or we trail it back to home port after each outing. Most North Carolina boaters fit into the latter category and for that reason someone has conjured up and applied the name trailer-sailor to this large group.

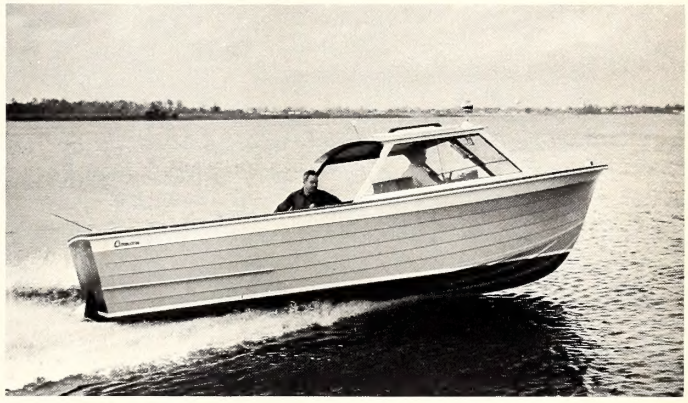
It may be rough road or super highway hauling; in either case the boat trailer takes a lot of punishment. Today's boat trailers are rugged and have safety and convenience features built in.

Fleet Cap'n Trailers of New Bern offers a complete line including standard, deluxe and tandem models. All Fleet Cap'n Trailers are equipped with demountable wheels, Timben bearings, heavy duty keel rollers, adjustable winch stand, transom cradles, walkboard, tilt and safety chain. Included in a complete listing of accessories are two- and four-wheel hydraulic brakes.

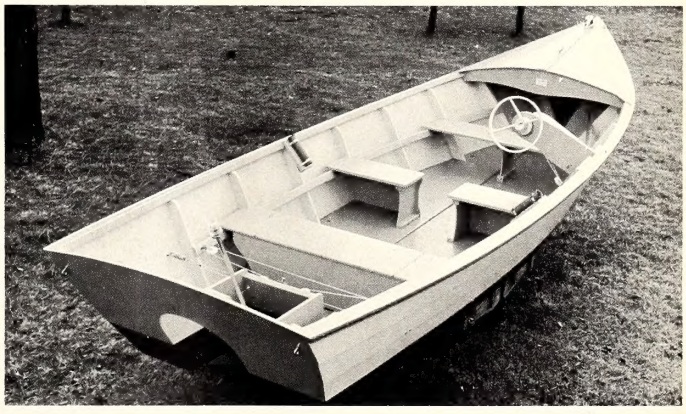
Completeness of the Cox trailer line is shown in the capacity range which runs from 300 to 6000 pounds. Trailers to fit the standard type outboard, sailboats, catamarans, inboards, and "deep-v's" are found in the Cox line. Included in the catalog of trailers and accessories is a list of safety tips for the trailer-sailor. Cox also makes camping models.

Again, we did not receive all trailer information in time for this writing. However, other companies advertised as making boat trailers are the Long Trailer Company, Tarboro and the Esco Corporation in Charlotte.

Above is a Hatteras 41-foot convertible, one of two fiberglass models made by the Hatteras Yacht Co., High Point, N. C.



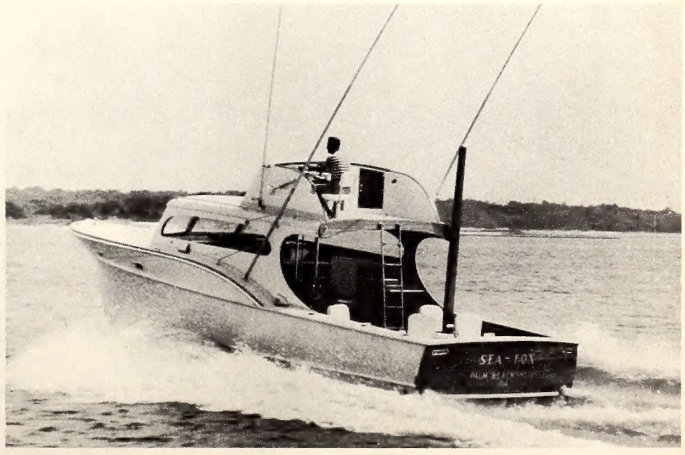
Commodore Boats of New Bern makes this 22-foot "deep V" hardtop inboard for family cruising or blue-water trolling.



Southeastern Engraving Co.

Above, is the seaworthy, 20-foot Simmon's Sea-skiff, Model 100.

Below is the 40-foot Willis Sport Fisherman, Marshallberg.



Dog Days of August

by Luther Partin

WHEN dog days are with us and that August sun hangs burning in the sky, the blistering rays understandably take the sharp edge off many a pond or lake fisherman's zeal. With many of us, pond fishing becomes limited to the early morning and late afternoon hours. Fish that are subjected to this same heat treatment, seek cooler water and are not as apt to bite, except during the cooler dawn and sunset hours.

This is not a bad arrangement, since fish and fishermen are often active at the same time and a happy state of coincidence may send you home with a good mess of fish. But if you, like a lot of us, enjoy sleeping in the pleasant hours after dawn, or like to sit on the porch in the cool of the evening, then maybe you're ready for a change in your hot weather fishing habits.

A few years ago, I experienced a change of pace in fishing that left me feeling the way a trout fisherman is supposed to feel when he fights his way into a wilderness area and gets his limit of wild brook trout that have never seen a liver pellet. It wasn't quite the same, but I did get a fishing thrill I hadn't experienced in a long time.

After a couple of hours of fruitless fly casting on a good bream-bass pond in a scorching August sun, I took advantage of the shade offered by the woods below the dam. A movement in a small pool beneath the drain pine caught my eye, and, on investigation, I found the cause to be a medium-sized sunfish of some kind.

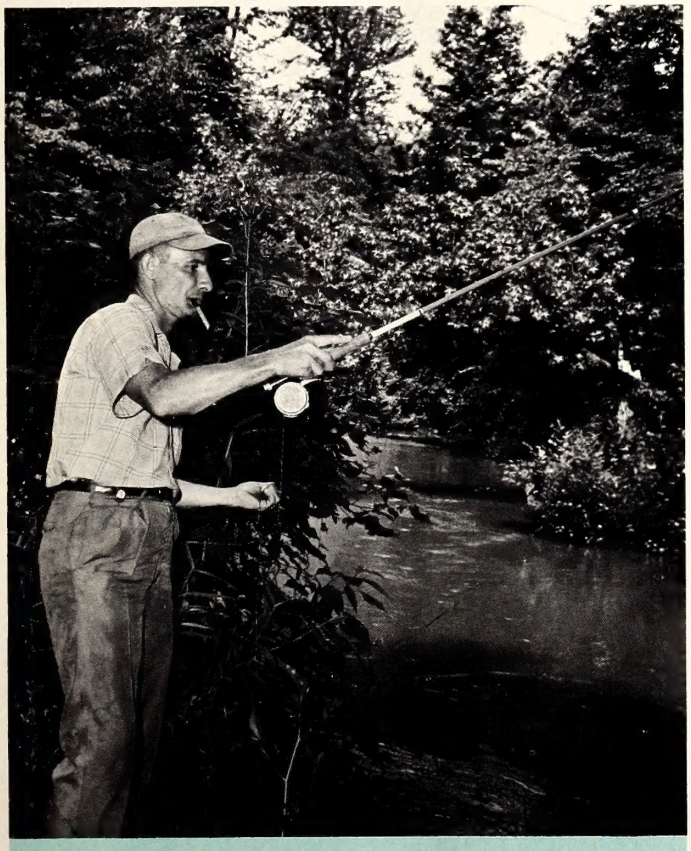
Even though I was easily visible, he pounced on the popping bug the first cast, and gave the light rod a work-out until the fiberglass wore him down. The long, black opercular flap, the blueish stripes under the eye, and the coloration identified the fish as a redbreast or "robin" as it is sometimes better known. He could scarcely have weighed over five or six ounces, but he fought like a tackle-buster. I returned the weary redbreast to his pool and pondered the mystery of his being there, as no one had ever caught one in the pond.

Since only bass and bluegills were stocked in the pond, I could only guess that it had come up the stream from a creek about a half mile away. The coolness of the woods, plus the intriguing thought that there might be other pools with more of the red-bellied scrappers, led me to explore the length of the little stream to its junction with the creek. There were no pools of any size, and the only fish observed were young-of-the-year bluegills that probably came over the spillway following the heavy rains.

There was a sizeable hole in the creek above the mouth of the stream and sitting on the bank was an old gentleman fishing with a cane pole and worms. He had several nice redbreasts on his string, and remarked that there were plenty of big "robins" in the creek, if you could only catch them. After discussing some of the more pressing problems of the world, such as what kind of bait the redbreast prefers, I borrowed a cut of his "Apple" chewing tobacco (the juice of which he assured me would make fish bite, if applied generously to a wad of worms), and headed upstream. The undergrowth of reeds, bushes, and briars was so thick in most places that wading was the only way to stay near the water. Having been revived by the fresh, cool atmosphere of the woods and with renewed hope generated by the old man's catch, I began wading and flicking a popping bug into the deeper water ahead. About the only type of casting possible was the "buggy whip", with an occasional chance to

One of your most likely customers in the shaded streams of midsummer is the robin. The strike at a top-water lure is explosive and the scrap is determined. This chunky panfish prefers some cover to hide under, so look for a submerged log or bit of brush to cast to. It will eat a wide variety of things, most of which falls into the water from the bank or streamside vegetation.

No, this isn't the Amazon Jungle, but a small Piedmont creek where the angler is flipping a tiny gold spinner for robin.



The author floats a popping bug over a likely-looking spot. The casting problems to the fly fishermen are quite obvious; try a flyrod of seven feet or less here.

whip the line out behind for a longer cast. The first hundred yards or so produced nothing, but finally a cast over a tree trunk into a small cove enticed an encouraging swirl. Raising the rod tip quickly only sent the bug flying up into a maple, causing no small amount of frustration.

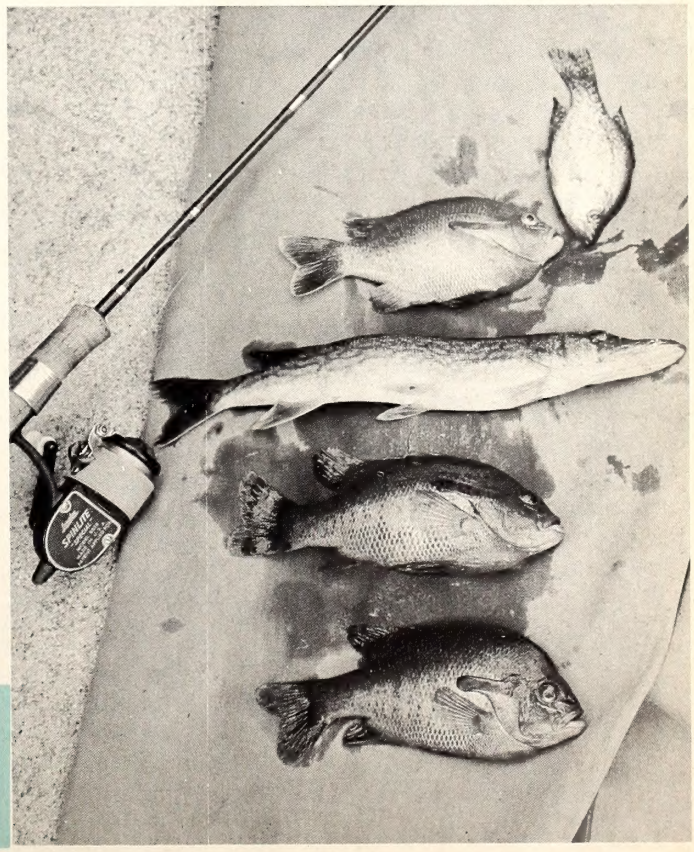
Several minutes of jerking and pulling finally freed the lure and I succeeded in manipulating it back into the same spot. This time something took it with a resounding pop and headed down under the tree and who-knows-what other debris. The resilient strength of the rod eventually forced him to the surface, then gently over the log into shallow water for the capture. It was a redbreast.

This same spot produced two more, none of them over six ounces, but all hit the bug explosively and fought viciously until exhausted. Taking a cue from the spot these were caught, casting to logs, stumps and rocks in the shallows produced another half dozen further upstream before darkness began to close in.

It was a most enjoyable fishing experience, although the quantity and size of fish caught were nothing to get excited about. The real pleasure came from catching fish under "wild" conditions, so to speak, in water that was considered to have very poor fishing, and accessible only to fishermen willing to expend a considerable amount of energy.

The scrappy redbreast and his passion for a popping bug are still high on my list, and can be caught in most streams from the mountains to the coast in North Carolina. The largest one I have caught weighed thirteen ounces and was taken in a very muddy creek in Johnston County.

When the dog days of August take the pleasure (and fish) out of pond and lake fishing, try stream fishing for what may be a real pleasant surprise. Insect repellant and waders come in mighty handy. There are numerous species of game fish that can be taken on your choice of tackle and bait in streams all over Tarheelia.



A short, light action spinning rod did the job on this typical creek catch. They're not big, but for the dog days, they look pretty good. Successful live baits include crayfish, earthworms and crickets, but you may prefer sticking to the flyrod and number 10 popping bugs.

DEPARTMENT OF LETTERS TO THE EDITORS, FIELD NOTES, AND ITEMS OF INTEREST

Conducted By Rod Amundson

Statement by Orville L. Woodhouse, Chairman, North Carolina Wildlife Resources Commission

"No doubt you gentlemen have heard that the American Motors Corporation annually recognizes outstanding work in conservation activities as they pertain to our natural resources. Awards are made to both professionals and non-professionals in the conservation field.

"It has come to my attention that Harry Cornell has been designated to receive a professional "American Motors Conservation Award" for 1964. The award, of course, is based on his activities as Chief of our Division of Inland Fisheries. Among other considerations, recognition was given to our State-wide program wherein our fishery biologists officially cooperate with the State Stream Sanitation Committee in its efforts to rid our fishing waters of pollution. National recognition was attracted to the long struggle to require power impoundment licenses to guarantee both quantity and quality of water releases in the Roanoke River which have ensured the successful spawning and preservation of our important striped bass populations. Those license stipulations established a precedent of national significance in power dam operation.

"In the trout country, the numerous complete watersheds which have been completely renovated for trout production have been immeasurably beneficial to our fishermen. In addition to national recognition for leadership in this field, we now have provision for "Fishing for Fun" in more than 1500 miles of trout streams for a 2-months' period of each year.

"National recognition also has been attracted to his efforts to cooperate with other public agencies concerned with the manipuation of natural resources, with the aim of preventing the destruction of trout habitat by impoundment, the loss of public fishing waters by drainage and flood control projects, and his leadership in preventing our fresh-water coastal sounds from being destroyed by salinity and turbidity.

"A letter from the president of the American Motors Corporation states, in part, 'My warmest congratulations on your selection as a recipient of an American Motors Conservation Award. Your outstanding personal effort and your understanding and dedication to conservation are an inspiriation to others. You personally have materially advanced the cause of conservation for the future.'

The members of the Commission join me in extending to Harry Cornell our appreciation for a job well done and sincere congratulations on the winning of this award."

On Course

DEAR SIRS: Although I can speak only for the Charlotte Squadron, I'm sure all of the Power Squadrons in North Carolina appreciate very much the space you devoted in the June issue to boating safety. Jim Beard's "Boating Rules of the Road" and John Parker's "The Skipper" were very well done and should contribute greatly to boating safety this summer.

We hope that many of our readers will want to take advantage of the free boating courses which all squadrons offer twice each year. They are comprehensive, 11 week courses covering about 25 hours of instruction in such subjects as rules of the nautical road, required equipment, seamanship, the compass, and chartwork. Classes are open to anyone interested in boating, whether they own a boat or not, and are free of charge.

Anyone interested can contact the local Squadrons in Morehead City, New Bern, Wilmington, Charlotte, Durham, Kinston, Jacksonville, Raleigh or Winston-Salem. Local marinas or boat dealers can probably supply detailed information. The next classes begin in the fall. The Charlotte course begins on September 12.

Thank you very much for your attention to the Power Squadrons' prime emphasis on boating safety and education. LACY S. SELLARS, PUBLIC RELATIONS OFFICER, CHARLOTTE POWER SQUADRON CHARLOTTE.

Water Dog?

DEAR SIRS: Earlier this week Cecil Hartley removed from his farm pond an eel about three feet long. His head was flat and just back of each gill was an arm with feet resembling a frog. The tail section flattened out and ended in a point. On this was the only fin he had.

Doing research on eels with the encyclopedia and the New Bern Library, we have been unable to find anything fitting the description of this one.

One old timer said he had seen only one such eel in his life, and that its bite would be fatal in a few seconds.

The picture of a mud fish resembles this eel with the exception of only two legs whereas the mud fish has four.

Without thought the above mentioned was destroyed and is now decayed; but another smaller one is caught in his trap in the pond.

Any information on this subject would be appreciated.

Enjoy your magazine, and have been a subscriber for years. JOHN EVERINGTON, NEW BERN

From the description, this is one of the salamanders. Some have only two legs, eels have none.—Ed.

North Carolina Chapter of Trout, Unlimited

The first North Carolina chapter of Trout, Unlimited was officially formed at a meeting held at Lenoir Country Club way last January. "Wildlife" regrets being so slow in publicizing and recognizing this fine group.

Trout, Unlimited is an organization of trout fishermen dedicated to the conservation and protection of trout and trout waters; and the North Carolina chapter of the association was formed to help preserve Western North Carolina as one of the best trout fishing areas in the eastern United States.

Approximately 45 dedicated trout fishermen from throughout the Piedmont and western part of the state attended the January meeting. The Executive Secretary of Trout, Unlimited, Art Neumann of Saginaw, Michigan was the guest speaker.

There are approximately 70 members from at least 15 North Carolina towns and cities in the new chapter, and trout fishermen form Virginia and Tennessee also have applied for membership in the chapter.

Officers for the year were elected at the Lenoir meeting, and included: Tommy Reese of Hickory, President; T. Henry Wilson, Jr., of Lenoir, Vice-President; Phillip H. Bracewell of Hickory, Secretary-Treasurer; C. O. Holler of Marion and Dr. Reid Bahnson of Winston-Salem, one year directors; George F. "Cap" Weise of Lenoir, and Chester Arnold of Greensboro, two year directors; James R. Todd, Jr., of Lenoir, and Dr. J. M. Hall of Elkin, three year directors.

The idea of forming a chapter of Trout, Unlimited in North Carolina first came up when a number of trout fishermen from North Carolina attended the Trout, Unlimited National Convention at Carlisle, Pennsylvania in September 1963. Since that time Reese and others have worked to form a chapter of the organization.

In his talk to the sportsmen who gathered to form a chapter, Neumann explained the aims of Trout, Unlimited, on both the state and national levels; and how Trout, Unlimited hopes to carry out these objectives.

"We must preserve the trout waters and wild trout in the country not only for ourselves and our enjoyment, but for the sake of the unborn generation," Neumann declared.

L. to R., Dr. Reid Bahnson, Jim Todd, Phil Bracewell, Tommy Reese, Chester Arnold, Geo. F. "Cap" Weise and C. O. Holler. T. Henry Wilson was absent when photo was taken.

More Turkey Talk

DEAR SIRS: A copy of your April 1964 issue has been passed on to me, I do not subscribe to your magazine.

The purpose of my letter is to express my sincere delight in an article entitled "Turkey Hunting versus Turkey Shooting."

I read many state wildlife magazines from time to time and I am always attracted to any information that regards wild turkeys. I have hunted wild turkeys nearly all my life and have come to the point that I very nearly ignore other forms of hunting in light of the inferior qualities, as worthy quarry that is possessed by other game when compared to this noble bird. (With due and respectful apologies to "purists" in other areas, e.g., quail, trout, etc.)

From this article I am gratified, indeed, to discover in author Parker Whedon a kindred spirit in our realm of wild turkey hunting. Not only do I find his message coincident with my own, but too, it is accurate and erudite.

Praise be to your magazine for supplying us with some material that transcends the base pursuits of the meat-hunter and the tall-tale-teller.

Please allow us to have more information on Mr. Whedon and by all means give us more of his masterful literary work. O. G. PENEGAR, JR., JACKSONVILLE 1, FLORIDA

Bluebirds Again

DEAR SIRS: Looking over our June 1964 issue, I came across the article entitled "Bluebird Slump," by Mrs. Susan H. Ekerson of Troy, North Carolina, in your Crackshots and Backlashes Section, and thought I would comment on this.

Being interested in birds and bird watching, I have had some experience with bluebirds and have for several winters worked with Verne Davison on his food habits study on this fine songbird.

For the past three years, I have had bluebirds nesting in my backyard in one particular box and raising two broods a year. I have also been fortunate to witness a male bluebird actually fight off an English sparrow attempting to take over their box. (He had him on the ground on his back and was beating him with his wings!!) Incidentally, one nesting pair of bluebirds in my yard seems to be the limit that they will tolerate. I have never been able to attract more than one pair to nest at a time.

As for the bluebirds' diet, I would suggest Susan Ekerson feed them the fruits of blackgum, dogwood, pyracantha smooth sumac, laurel cherry, Japanese and American holly, or currents and/or raisins. All of these are choice foods of this bird. The currants or raisins can be bought at a store, but the fruits must be gathered locally. In the fall when they are ripe, pick them

A common wild fruit that is enjoyed by some birds is the dark blue poke berry.

and store them in small plastic bags, holding them over the winter in a freezer. Small bags are preferred to larger ones because one can be taken out of the freezer and used for a week and not have the fruits go bad, as would happen if a larger bag was used.

Plantings of Japanese holly, pyracantha, laurel cherry, smooth sumac, or dogwood around the house will in time furnish the necessary fruit without going to the trouble of gathering and storing it. These will also be attractive to other fruit-eating songbirds such as mockingbirds and cedar waxwings.

For more detailed information of the food preference of bluebirds, and just songbirds in general, a wealth of information can be found in articles written by Verne E. Davison, Washington-Field Southeastern Biologist of the Soil Conservation Service, in these issues of the "Audubon Magazine": 1961—January-February, May-June, November-December. I think Susan will enjoy these articles and they should be available at a local library.

Two other points worthy of mention are: mowing the lawn frequently will make the yard more attractive to bluebirds because it makes insects easier to find; never use any chemical insecticides around the yard. Insects, sprayed or coming in contact with chemical insecticides, gradually lose their control of flight or coordinated movements and flop and buzz around the ground, making them attractive to, and easily caught by bluebirds. Ingestion of these insects can cause death if taken in quantity, or possibly render the birds incapable of reproducing their kind. I can tolerate the insects if I have the bluebirds around.

I hope this information is of some value to Susan and others. E. R. SMITH, SOIL CONSERVATION SERVICE BIOLOGIST, RALEIGH

Well-Received

Mr. Ted Mitchell
Division of Game

DEAR SIR: Our club wrote you on improving our wildlife on our property.

We want to thank you for your help and pay particular tribute to Mr. John Hardister, Mr. James Renegar and Mr. Cambell King.

Their very courteous and willing response to our hunting area was wonderful service.

The wildlife movie Mr. Hardister showed at Immaculate School sure should make some more wildlife members in the future. Children's quote: "The best movie we ever saw."

Thanks again for everything. CLAUDE GLOVER, HENDERSONVILLE

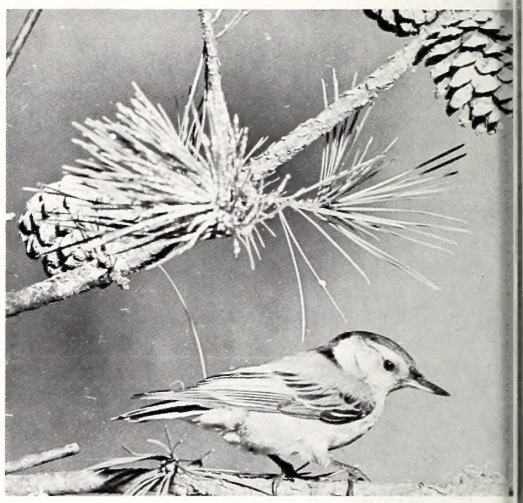
Put An Oar In

DEAR SIRS: Just thought I would renew my Wildlife subscription. I really enjoy reading it and it is well worth the price. I have always been very concerned about the wildlife of North Carolina, and I have a complaint to make, not for myself alone but for my sportsmen I talk with. It is about people trying to fish with small boats on High Rock and Badin lakes. The larger and faster boats are going to completely do away with all fishing if something isn't done soon. ALLEN EARNHARDT, SPENCER

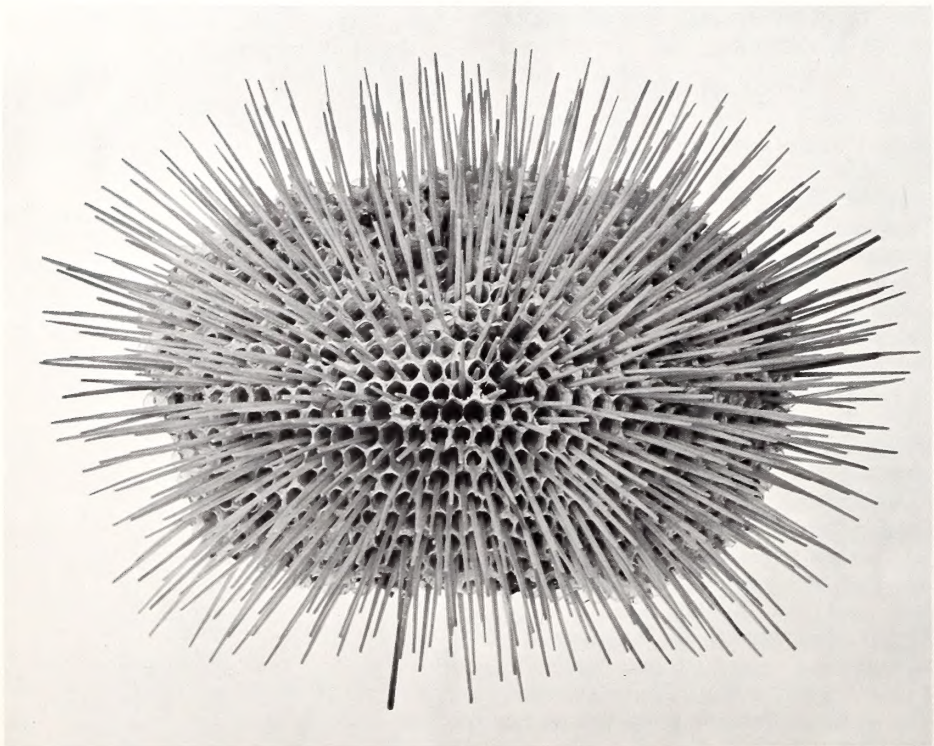
There will always be a conflict between fast boaters and fishermen until funds are available to zone public waters for specific uses. Marking such zones would be extremely expensive, and the wisdom of Solomon will be needed to decide who gets to use which particular area of water and for what purpose.—Ed.

Come Again?

DEAR SIR: I enjoy your magazine very much and eagerly look forward to its arrival each month; however, one copy is sufficient. I am now getting three copies each month and just don't have time to read the two extra copies. I wonder if you can just extend my subscription?



I especially liked the bird pictures by Mr. Karl Maslowski and am enclosing a picture I took of a little nuthatch that visits my feeder each afternoon. HENRY RHYNE, MT. HOLLY.



← Big One

DEAR SIRS: This letter is about a colony of social paper-wasps, species Polistes. Or, more specifically, it is about their unusually large (I believe) apartment built under my air conditioner last summer. It has over six hundred cells, counted by dropping toothpicks into each cell, and is 23½ inches in circumference.

The Encyclopedia Americana says of this species: "The nests, which begin with a single cell, around which others are added with a large disc two or three inches in diameter (underscoring mine) . . ."

Well, I watched this one begin. I worked around it all summer, often bareback, without even so much as one hostile overt act by either the wasps or myself. After the frost put the quietus to their productive summer, I clipped the nest from its mooring, brought it in for safekeeping and have been wondering ever since if anybody would be interested except myself and maybe the few surviving wasps who would regard it with sentimentality as the old home place. ULMONT IVES, RALEIGH

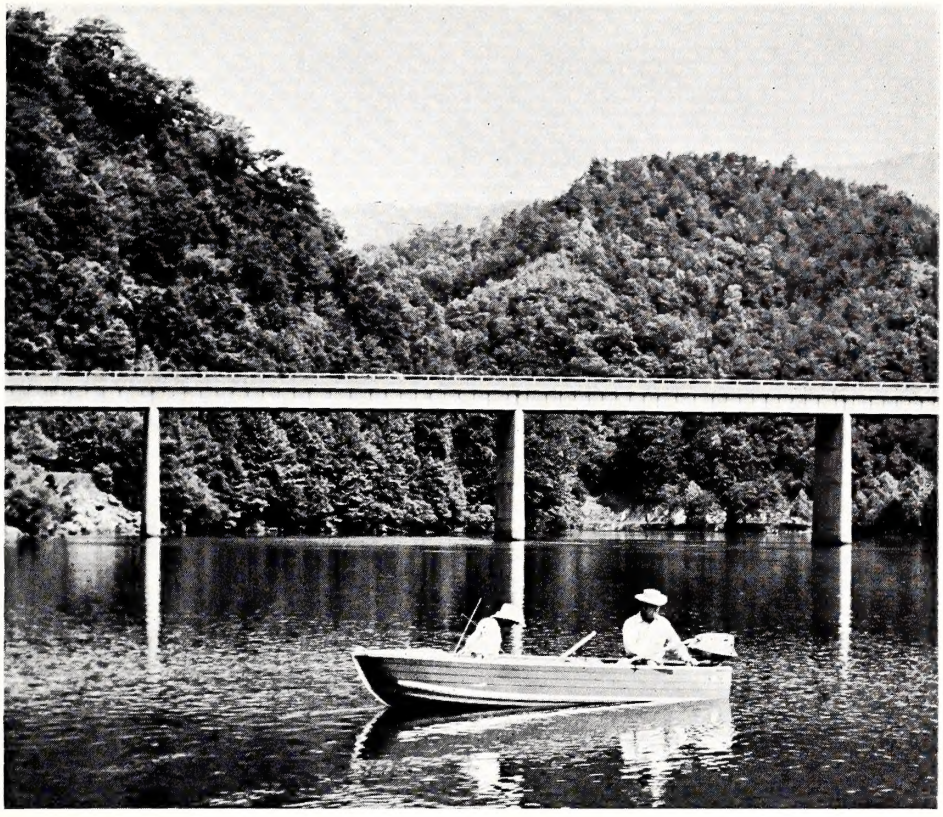
New Free Booklet For Hunters

Although the hunting season is not yet upon us, interest is beginning to boil. Summer plinking, target shooting and varment shooting should be approached in a safe and sportsman-like manner just as most hunters approach the fall hunting season. Now is the time to help the young hunter and here is an opportunity to start with first-rate material. The Olin Mathieson Chemical Corporation's Conservation Department has recently released a new booklet entitled, "For The Young Hunter". The very capable Ed Kozicky, John Madson, and artist Bob Hines, have done an excellent job in presenting for young hunters the very important subject of hunting ethics.

The authors state that the booklet hardly scratches the surface of this subject. However, hunter safety officials believe that this booklet can start any young hunter on the right path to a lifetime of pleasure and friendship afield. It may also open the eyes of many an old hunter, give him a fresh outlook and help him to become a full-time sportsman, a gentleman, while participating in the sport he has long cherished.

If a sportsman true you'd be
Listen carefully to me:
Never, never let your gun
Pointed be at anyone
That it may unloaded be
Matters not the least to me.

These lines are from a poem written by Mark Beaufort, an English hunter, for his sons, many years ago. Included in the booklet, this poem sets the theme for the young hunter and is dedicated to giving him, a foundation for true sportsmanship. It is chock-full of pertinent bywords, safety tips and outdoor philosophy. A copy of this new and interesting treatment of hunting ethics can be had free of charge by writing to the Division of Education, Box 2919, Raleigh, North Carolina. It is available on a first come, first serve basis. Also available from your Wildlife Commission is a Sporting Arms and Ammunition Manufacturers Institute Publication, "Shooting Fun for Everyone." This boklet offers tips on gun safety, gun clubs and marksmanship.



As you walk down to the edge of Cheoah Reservoir, the air temperature drops about one degree for every step you take. This Swain-Graham County lake rarely gets above 60° and is even colder up where the deep waters of Fontana enter.

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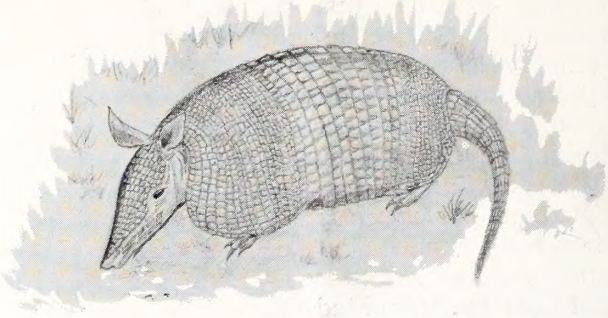
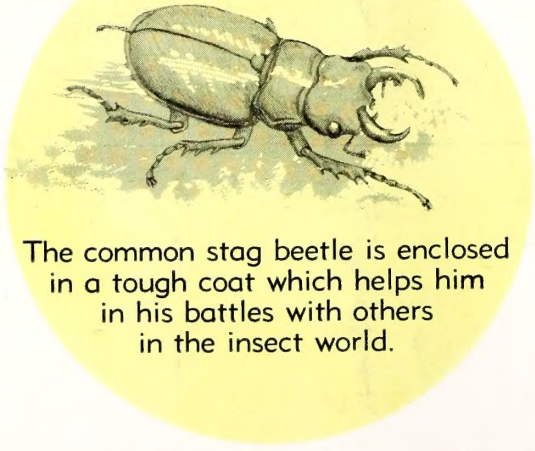
ANIMAL ARMOR EXPERTS

Although it is doubtful that he is a resident of North Carolina, the armadillo represents the height of armor in the animal world. The armadillo is a mammal.



The external skeleton of the crayfish must be shed in order for the animal to grow. It hides while the new one hardens.

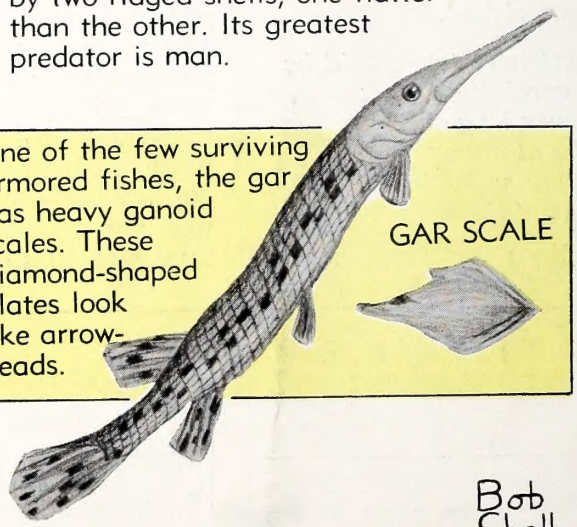
The scallop is well protected by two ridged shells, one flatter than the other. Its greatest predator is man.



The common stag beetle is enclosed in a tough coat which helps him in his battles with others in the insect world.

One of the few surviving armored fishes, the gar has heavy ganoid scales. These diamond-shaped plates look like arrowheads.

GAR SCALE



Bob Shell

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Wildlife in north carolina

ten cents

september 1964

Jack Dermid

Wing Shooting

Dove shooting is one way of harvesting Nature's crop, but it is also a sport with specific rules and sportsmen's ethics. How will you play the game this year? We hope that you will get your birds safely.

Wildlife in north carolina

The official publication of the NORTH CAROLINA WILDLIFE RESOURCES COMMISSION, Raleigh. A monthly magazine devoted to the protection and restoration of our wildlife resources and to the improvement of hunting and fishing in North Carolina.

State of North Carolina

TERRY SANFORD
Governor

North Carolina Wildlife Resources Commission

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COVER

The pileated woodpecker is a big bird (about the size of a crow) and is sometimes divided into the southern and northern subspecies. It is the northern variety (slightly larger) that most authorities place in the mountains of the state, with the southern group over the remainder of the state. The male has the red patch on the cheek in addition to the red crest. The female (back cover) lacks the cheek mark. Painting by John W. Taylor.

WILDLIFE IN NORTH CAROLINA recognizes the need for close cooperation between State and Federal conservation agencies and the people who hunt and fish—to bring about a restoration of our renewable resources. The Editor gratefully receives for publication news items, articles, and photographs dealing with the North Carolina out-of-doors, but reserves the right to reject materials submitted. Full credit is given for all materials published.

* * *

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That Time Again

by John Parker

SEPTEMBER is a busy, interesting and to some, a frustrating time of year. The hunter-fisherman simply has too much to choose from. It is a time of transition.

Vacationers, in their fall migration are returning home from the beaches and lake resorts. Students are returning to their respective places in the world of learning. And the blue-winged teal, in its fall migration, is already winging south. Hardly have we recovered from the rigors of summer fishing, when there is talk and preparation for the fall run.

The blue-winged teal is safe for a while but not so the mourning dove or the less sought-after clapper rail. That's what makes September frustrating. If the August fishing was poor, it just **has** to be better in September—or at least that's what it says in the fishing digests. Fall hogfish are mighty good fried just so. Then on the other hand it has been too long since we fried up a mess of dove. The decision is made, the die is cast and the dove wins out—or should we hopefully say, loses out.

Many hunters look forward to starting the season off with a bang by having a successful dove hunt. And quite a bang it will be if you hunt at one of the Commission's dove hunting areas (see page 14) or with a large group in a field of your choice. Everyone, without giving it much thought, also desires a safe season, from beginning to end.

Much has been written about the way in which one should go about bagging a limit of gray-feathered projectiles. Dove hunting equipment has had its treatment also. But as anyone knows who has pursued the sport, you need not have fine or specialized equipment. It is not unusual to see a fellow, who has probably just broken away from his livelihood, pop up from a row of millet wearing a white shirt, and occasionally a tie. Now right away, the tendency is to move off another hundred yards for fear of being cut down by a greenhorn.

This is a normal reaction. After all, one would not expect to see a fellow surf fishing in a pair of street shoes. But a hunter does not have to step out in buckskins to be good and safe at the game. There is that word again: **Safe.** So, drawing from some field experience and the dove hunting accidents of last season (coming next month, "Hunting Accidents, 1963-64") let's sort out some safety tips for the season ahead. Yep, it is that time again.

FIRST, that talk about white shirts was just one way of saying that almost everyone is doing it. Dove populations have had their ups and downs in years past, but due to good management the picture continues to remain bright. Besides the bushels of spent shells turned under in the spring plowing there is another fact to prove that dove hunting is a popular sport. How many do we bag? One authority reports that about 20,000,000 doves are bagged annually This, of course, is a national figure.

The September dove hunt will be for many a youngster his first time to actually use his gun in hunting. This means that dad has a responsibility to prepare him for the enjoyment and challenge that is offered by a lifetime of safe hunting. There will also be some oldsters who could well stand brushing up on gun safety. Let's hope that they have both done their pre-season training.

Why do so many people turn out for opening day of dove season and for quite a few days there after? Most likely because it is the best chance for the average hunter to shoot a lot at something moving; it really does not require special equipment; there is a good chance that you will take home some game; and, many folks thoroughly enjoy the group-type of hunt.

With that out of the way let's get back to that all important business of hunting safety. Perhaps the first knowledge that you have in some way—however small—contributed to what was **almost** a hunting accident, starts something like this: You have just turned loose two or three across the field and while the echo of the last round is still in the air, up from between the rows pops that fellow in the white shirt, buckskin or hunting jacket. That's right, anyone can turn up on either end of the hunting mishap but just the slightest amount of effort on the part of each man in the field will assure safe returns for all.

In dove hunting, there is always the chance of someone turning up at the wrong end of a gun. Most of the time it is at long range as described in the little episode above. When your group

goes into the field, note the position of each member of the party. Have a count off occasionally or better still, keep your buddies in sight. When a group descends on a field, it is best to keep all shooting well above the horizon. Also maintain a safe distance between hunters. Fifty yards is good but a hundred is obviously better.

If you do turn up on the receiving end of some stray pellets, then you had better duck; there may be another load on the way. No one wants to be peppered by bird shot at any range, but the real fear is that of losing all or part of your sight. This did happen last year to a dove hunter. Shatter-proof sunglasses will make you feel safer while hunting and will also reduce the glare problem.

Long-range peppering is one type of dove hunting mishap. Another type and one that is often fatal is the close range

Joel Arrington

You can't dodge rifle slugs or shotgun pellets; always watch your gun muzzle.

accident. Tragedy in the corn usually starts like this: "He stood up about the time that I started to shoot." Last season one accident happened like this and was fatal. Another happened in the same way and produced serious wounds to the victim's head.

Other types of accidents in the dove field are similar to those that occur in any hunting situation. That is they involve loss of fingers or toes, or they involve stumbling, automobiles, etc. One chap lost some fingers last season when he fired improper ammunition in his double. Be mindful of all accident possibilities and develop the necessary safety practices that will prevent them.

Be careful around the automobile especially when everyone is in a hurry to get into shooting position. We have all seen it and perhaps participated in the carelessness that often surrounds the excitement and confusion of the late arrival of a hunting party. "Who has my shells; don't forget the waterjug" and "where did that dog get to?", are typical expressions occurring during the 11:59 rush to the field. Be careful.

Most of the rushing can be completely eliminated if you plan "last month." You bet, ask permission. Check to see who is harvesting during the first part of September. Make a dry run out to the public shooting area. Check feeding and watering areas, flight routes, select alternate areas, and in general really prepare for the hunt.

On the day of the hunt, leave home in plenty of time to pick up others in the party and still arrive early enough to make a final check of flight patterns, etc. Someone will probably need shells, so add a few minutes for a stop at the local sportshop or general store. If you can't leave early, follow the advice of the driver safety folks and arrive safely even if you arrive late. Concerning the automobile, there is nothing quite so welcome when you are ten miles from nowhere and stuck, as a shovel, tow rope and a few other items that help change the family flivver into a hunting wagon.

Don't forget, hunters have automobile accidents too. Arrive safely and hunt safely.

The gun is the focal point of the hunting trip. It should be given this position of importance. However, gunsmiths across the state will no doubt have some one bring in a gun for repair on the morning of the first hunt and ask to have it fixed by noon. After checking your gun for barrel obstruction and general mechanical soundness, fire a few rounds to be sure that she will. If you can arrange a round or two of skeet or trap, your chance of connecting on opening day should be better.

Since the September's noonday sun is still on the warm side, and often downright hot, cool clothing should be the uniform of the day. Light weight khaki pants, short sleeve shirt, cap of your choice and low-top boots or shoes complete your outfit. The camouflage uniform, fabric or netted type, will show up in the field again this year as it has in the past few years. It is all a matter of choice and where some like to build their blind others enjoy wearing their blind. Regardless of your choice, most will agree that motionlessness is the most economic type of concealment.

What extras can the dove hunter add to his equipment which need only start at street clothes, license, shells and gun? Here is part of what he has to choose from: seat and shell box combination, folding seats with or without game and shell bag attached, dove call, decoys, shooting glasses, hunting jacket, vest, or game bag, extra shells, thermos jug, retriever, and there will be some transistor radios; so if you hear "you ain't nothing but a hound dog" floating across the tassels, it probably is **not** some irate hunter scolding his prize retriever!

An important regulation change that has been released by the Department of the Interior will permit the taking of doves over lands that have been used for any valid agricultural operation. This means that doves can now be legally hunted over livestock feeding areas, such as hog lots, weed control areas, soil improvement and cover crop areas.

Another change requires that one fully feathered wing remain on all dressed migratory game birds (including the dove), until the hunter reaches his home or a preservation facility. This change will help game biologists age your take even if you have field dressed the birds. The one wing can easily be clipped off after you arrive.

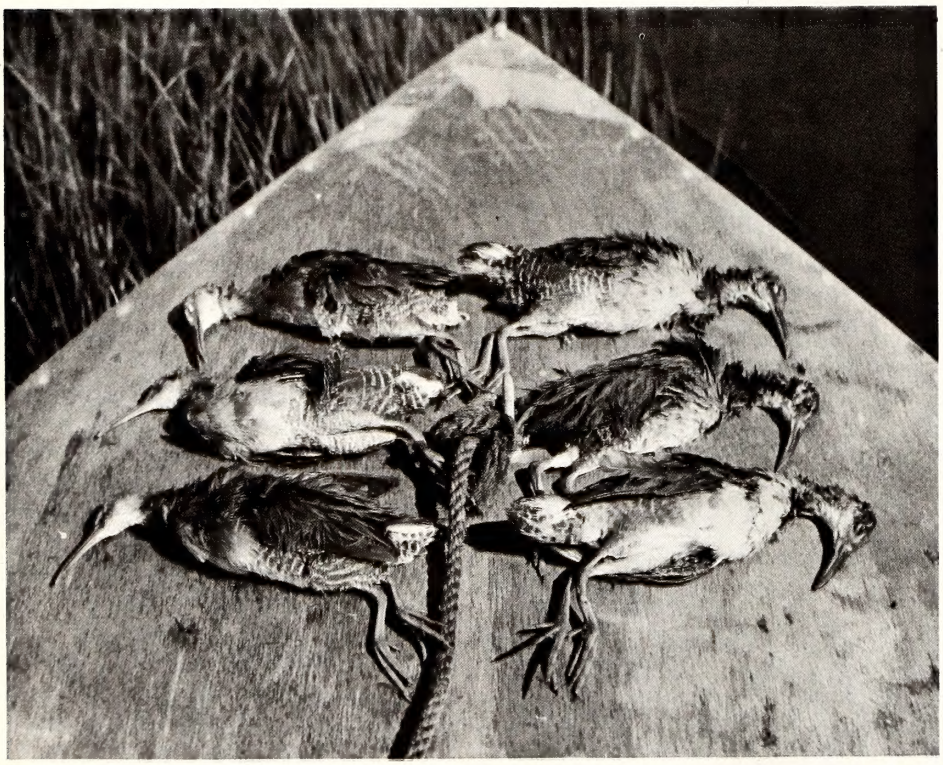
A last word about this year's dove shooting involves a point on marksmanship that is generally agreed upon and has been said before. If you can take your birds at a one-for-two ratio, you are in the big league and one-for-three will permit you to leave by the front gate

rather than the back. These figures hold true only if you take them as they come. That is, try all that are **in range** whether it is your favorite shot or not. You can run your score up, which is of little importance to a successful hunt, by carefully selecting your shot but that supposedly takes you out of the contest. But this is for the man behind the gun to decide. Clean kills, safe and enjoyable hunts are what count.

A few hunters will open the season on the marsh rather than in the field. Their quarry will be the lesser sought-after clapper rail or one of his cousins. Actually there are six rails on our coast which can be hunted. To this group we often apply the collective term of marsh hen. The largest and most important rail to the hunter is the clapper rail. Average weight of the male clapper is twelve ounces with the female running slightly smaller. The king, Virginia and sora rails with average weights of eleven, four and two ounces respectively are also bagged and the frequency with which these birds are taken by the hunter will depend on the area.

All of the rails are poor fliers when compared to the dove, but nevertheless make excellent targets on the jump. Because most of these birds are seldom seen except when flushed, that is the manner in which they are hunted. And as most know, the primary method of hunting these birds is from a poled boat during the highest of tides. They can be flushed by walking them up but this is usually a tough, exhausting method due to the soft, mucky condition underfoot. In walking after these birds in salt marshes, which is the prime area for the clapper, be especially careful of the razor-like oyster and mussel shells. Also, take care when crossing sloughs or cuts.

The demands of marsh shooting can be harsh on your gun and will require additional care while on the hunt and after you have called it a day. It would be best to use an older gun or at least carry an oily cloth or gun rag with you.



Jack Dermid

Although the daily bag limit is 15, this is a pretty good morning's work on marsh hens. These are clapper rails, one of our larger rails, weighing about 12 ounces.

As for the boat, apply the same practices of safe boating as you would if you were Sunday cruising. You may need to cross areas of open water in search for likely looking marsh. For this reason and for quick return to dock in the event of adverse weather, a motor is advisable but must, in no way, be used in the hunt. Check the Federal Regulations relating to migratory birds for the particulars on this and other such information. Start out of the marsh area in time to prevent being trapped by the fast ebbing tides. It is a pretty good wait between tides.

Gallinules can also be hunted early in September but they are not normally found in the type of marsh most frequented by the rails. They favor a more open fresh water marsh.

Many areas along the North Carolina coast will furnish huntable supplies of one species or another of rail and gallinule. Marshes around Southport and Beaufort are favored. There will be overlapping of species in many areas so a mixed bag is likely. Bag limits are liberal for all of these birds. Whether you fill the limit on this game will depend on the supply, but also involves the art of poling, stamina, and your gun handling ability while standing in the forward end of a poled skiff. Because standing is the preferred position for marsh gunning, your skiff should be wide enough to offer a stable shooting platform yet maneuverable enough for easy handling.

In marsh hen shooting, take care not to down any other types of marsh nongame birds. If you are not familiar with the various types, perhaps a perusal of the family bird book would help.

Check with your local folks before going out and of course, plan your rail hunt at high tide and preferably on one of the unusually high tides (see tide table).

Whether you hunt often or occasionally this season, whether you hunt for dove or deer, do so in a safe and sportsmanlike manner.

Tide Data—Southport, N. C.

Date		Time	Hgt. (feet)
Sept.	1	3:44 PM	4.9
	2	4:47 PM	5.1
	3	5:46 PM	5.2
	4	6:40 PM	5.3
	5	7:30 PM	5.3
	23	8:41 AM	5.0
	24	9:27 AM	5.1
	25	10:13 AM	5.1
	26	11:11 AM	5.0
	28	1:17 PM	4.9
	30	3:31 PM	4.9
Oct.	1	4:33 PM	5.0
	2	5:29 PM	5.1
	3	6:20 PM	5.1
	6	8:16 AM	5.1
	7	8:57 AM	5.0
	21	7:35 AM	5.3
	22	8:22 AM	5.5
	23	9:11 AM	5.5
	24	10:03 AM	5.5
	26	12:01 PM	5.1
	27	1:05 PM	4.9
Nov.	3	7:10 AM	5.0
	4	7:50 AM	5.1
	5	8:29 AM	5.0

Time given is for Southport. For Beaufort-Morehead City, add 13 minutes to the above time.

NORTH CAROLINA WILDLIFE

RESOURCE-O-GRAM

A ROUNDUP OF THE LATEST WILDLIFE NEWS

Shooting Starts in September

Tarheel scattergun artists get their first crack at fair game with the opening of the season on marsh hens September 1. "Marsh hens" include Clapper and Virginia rails, sora and gallinules. Shooting hours are from sunrise to sunset with a daily bag of 15 birds of any single species or a combination of species. Best hunting for these birds will occur during the autumnal moon tides when brackish water submerges salt water marshes. Marsh hen season will continue through November 9.

Next on the list are doves with another split season this year. First segment runs from September 12 through October 17, the second from December 12 through January 14. Shooting hours will be from noon to sunset with 12 birds allowed in the daily bag, a two-bird increase over last year's ten. This year dove hunting will be permitted at livestock feed lots and newly-sown grain fields.

Woodcock will become legal targets on November 21 as well as Wilson's snipe. Both seasons close January 9. Bag limits are five woodcock and eight snipe daily. Possession limits on all birds mentioned above are twice the allowable daily bag after the first day's shoot.

Public Drawings Set for Bear, Waterfowl Hunts

Drawings for bear hunts on western wildlife management areas are scheduled to be held at the courthouse in Waynesville at 9:00 a.m. Wednesday, September 16. Party hunt applications containing not more than 25 names must be received in the Wildlife Commission's Raleigh office by September 1 in order to be processed for the drawings.

Waterfowl hunters seeking preferred dates to shoot in blinds at Lake Mattamuskeet refuge must have their applications in the hands of the Blind Committee, New Holland, before 6:00 p.m. on September 22 in order to qualify for a public drawing scheduled to be held at the Courthouse, Swanquarter, 9:00 a.m. September 24. Applications received by the Blind Commission after the 6:00 p.m. September 22 deadline will be processed on a first come, first served basis.

Trout Season Extended—With Reservations

After Labor Day all designated mountain trout waters, except those in wildlife management areas, will be open to trout fishing through October 31—provided that only artificial lures with one single hook may be used and all trout taken shall be returned to the water alive except one trophy-size fish that must be at least 16 inches in total length. This action was taken by the Wildlife Resources Commission in recognition of the public desire for fall trout fishing and the need for protecting and preserving native trout populations.

Where to Fish

III-Coastal Plain

by Duane Raver

Photos by the Author

This is the final part of a three-section series on some of North Carolina's better fishing spots. It's up to you to catch 'em!

WHEN we started this three-part series a couple of months ago, it soon became evident that the job was much larger than nine or ten magazine pages would hold. Among other things, it has pointed up just how much fishing water . . . some better than others . . . we have in North Carolina. At worst, it has been a shotgun scattering of bits of information about a few of our best-known fishing holes. It is obvious that it is only a framework upon which to hang on-the-spot information as you gather it.

The discussion of the possibilities for fishing in the vast Coastal Plain certainly follows this pattern. Even sticking to freshwater almost exclusively, the places to fish soon add up to a list that is impossible to cover adequately in these pages. We still have to generalize a good bit, speculate and even prophesy in looking at a few of the "good" places to fish in the Coastal Plain.

ALTHOUGH natural lakes are present, it is the running water that constitutes a large part of the angling in this part of the State. Much of this flowing water does move very slowly and might better be classified as "swamps" or back waters of some of the sounds. But it does move, if ever so slowly.

The farm ponds are replaced for the most part by "mill ponds," although the acreage is probably nowhere near that of the Piedmont ponds. But these old impoundments, some still providing the power to grind corn, furnish lots of good fishing in the Coastal Plain.

Then there are a few natural lakes, and several quite large ones. It is with these three basic types, flowing streams, small ponds, and natural lakes, that we will check into this month.

Flowing into the north side of Albemarle Sound are several rivers that are almost legendary in their fish stories. And many of these stories are true. The names, North River, Pasquotank, Little, Perquimans and Chowan, are just about synonymous with big fish. One surprising thing to many anglers who try these rivers for the first time, is the wide variety of water types that they find all in the same river. The head waters in some are mere trickles or swamp seepage, gradually widening into deep, black water streams of quite cool water. Within a few miles, the creeks funnel out into full-blown rivers, and before emptying into the Sound, virtually lose their identity as rivers as they blend into the brackish water.

Thus within a relatively short distance, these rivers furnish fine bluegill fishing, areas for bass casting, yellow perch and crappie angling, striped bass trolling, and even a few scattered salt water fish thrown in. Not all these fish are present in the rivers at the same season. The best panfish angling is fairly early in the spring, perhaps peaking about May first. Normally as the bass begin to spawn (anywhere from late March to early May), they just about quit taking lures. But since not all of the bass spawn at the same time, some pretty fair fishing goes on right through the entire spring.

Crappie fishing is often seasonal too, and may start in midwinter. Striped bass head up the Sound and then the rivers during cold weather and by late winter are often furnishing good fishing.

Although it is a rather short river, Little River is sort of in the "middle" of the group in this area and we will take it as a representative of the general fishing that can be expected. Local conditions can alter these generalizations though and it's best to check before fishing. Best times: Mid-March to June 1; fall and winter for striped bass. Fish most likely to be caught: bluegills, bass, crappies, yellow perch, striped bass and catfish. Productive methods: popping bugs for panfish and bass; spinners and minnows for crappie and yellow perch; large jigs trolled or cast for striped bass. If you head into the Sound, have a boat of at least 15 feet and powered by 18 or

more horsepower.

Most anglers bring their own boats to these rivers, some using private access points, others launching at the Wildlife Commission's areas like the one on Hall's Creek (leading into Little River) between Nixonton and U. S. Highway No. 17. The headwaters of these rivers are well-suited to small paddle boats, but be sure that your craft is stable; this black water is mighty wet.

THE Chowan River perhaps deserves at least another paragraph or two, because it presents a lot of fishing water to the angler, and has one notable tributary, the Meherrin River, which flows out of southern Virginia. The Chowan has long been noted for good fishing, and although it may not be quite up to its fame of 50 years ago, it still produces plenty of nice fish. The water is quite dark, but rarely muddy. There are some deep holes, particularly in the lower part of the river, but much of it is relatively shallow. It does drop off rather abruptly along its edges, except during high water when the banks are pushed out into the surrounding swamps and become all but lost among the cypress and gum trees.

Rivers of this type have a very bad reputation for being "snakey." There's no question about it, cottonmouths do frequent many of these rivers, but you may fish for years without seeing one. Then most of the ones you do see are not cottonmouths, but are harmless, banded watersnakes. Use caution, but don't let the snakes keep you away.

We mentioned the Meherrin River a moment ago. There are two reasons we will single it out for separate mention. For one thing, it does have some pretty fair fishing; but perhaps of even greater interest, it is a good "float" stream with plenty of wilderness-like stretches. Second, it produced at least one smallmouth bass which is the farthest east smallmouth reported for the State. These are not taken regularly, but it does show that the water is cool and moderately clean most of the time.

The Cashie River is one of the "unpublicized" fishing streams of the State and very likely deserves more attention from anglers than it now gets.

The Roanoke River flows into the western end of Albemarle Sound after meandering its way some 165 miles from where it crosses into North Carolina. Although this large stream produces fish the year round, by far its greatest claim to fame is the striped bass run each spring. The resident fish population list is a surprisingly long one and includes bluegills, bass, walleyes, channel catfish, carp, and several others. The seasonal list headed by the striper, includes yellow perch, shad and herring.

It's news to no one that most of the time the Roanoke angling isn't worth the effort. But come about mid-April, the striped bass or rock fish changes all this. The striper heads out of Albemarle Sound and up the Roanoke in large numbers. And fishermen are waiting for them. Some with seines, some with gill nets and traps, others with bow nets. And quite a few with sporting tackle.

Although this sport fishery for the striper will be the subject of an article along about next April, briefly it amounts to this: The stripers congregate at rather specialized areas near Roanoke Rapids and Weldon to spawn. This migration usually peaks around the first of May, but some fish are still around as late as early June. A stable boat with a 10 or 15 horsepower motor is almost a necessity, although a few fishermen cast from the bank where they can get to the water. Some rental boats are available at Weldon.

The rock fish is on the move much of the time and a boat is very helpful in exploring new spots and covering the water thoroughly. Still-fishing with substantial tackle and cut bait or bloodworms produces plenty of stripers. Trolling with medium-sized spoons is also effective when the water isn't too turbid.

One answer is to visit the Roanoke one May day and do as the natives do; you'll catch some rock.

The Wildlife Commission maintains an access area near its fish hatchery, a few blocks from downtown Weldon.

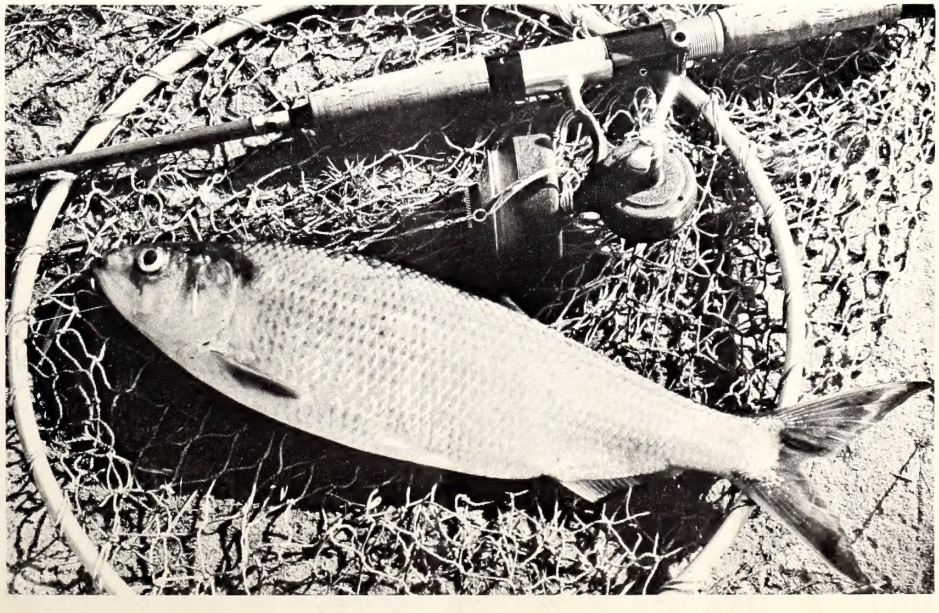
The Tar River is best in the early spring when the migration of shad begin streaming in. The hickory shad usually arrive first and may begin as early as March 1. Anglers who pass up the hickory and the larger American or white shad, are missing some prime sport.

Many of the larger rivers of most of the coastal counties have moderate to large spring runs of shad. In some creeks they seem in a more willing mood to hit artificial lures than others, but all are worth investigating. Spinning and spin-casting tackle far out-weigh all other types, with perhaps 90 percent of the shad taken on two or three lures. The tiny 0 or number 1 Barracuda Reflecto spoon, and a rather specialized jig-like lure known locally as a "shad dart" are the preferred lures. Spinners and other bright baits take shad too, but only now and then.

Of course this enthusiasm for the shad fishing shouldn't crowd out the fact that many of the coastal rivers like the Tar, have good fishing at other times too. But the big push of anglers from other sections of the State certainly centers on the spring months. Striped bass migrate up the Tar to some extent and the fishing some years can be quite good. Methods used are similar to those followed in the Roanoke.

THE many tributaries and short inlets to the Pamlico River are simply too numerous to even name. The area from Washington to Pamlico Point on both the north and south sides of the River

This is a hickory shad. They generally precede the larger American shad on the annual spring spawning run. April is good.



contains some excellent bass-bluegill waters. Access may be a problem in many areas, and car top boats can be launched wherever the road comes near the water.

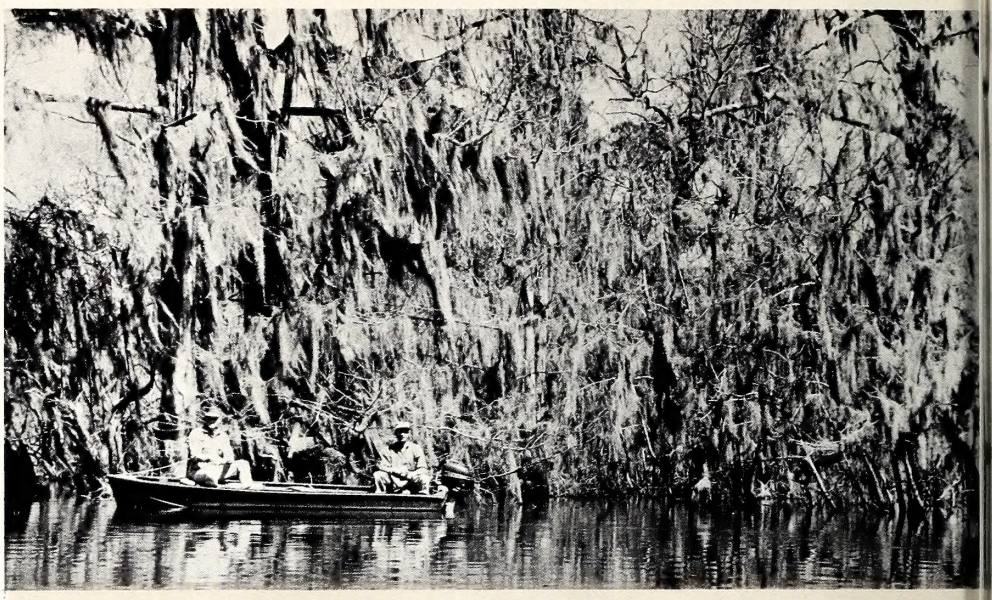
It is in these black water creeks that the popping bug is at its best. There are miles and miles of such slow moving streams (although individually they are quite short and fairly narrow) and perhaps they contain some of the best fly fishing to be had in the State. The water stays surprisingly cool, but early morning and evening are still the best times except for the spring months. Over-hanging vegetation can be a vexing problem to all but the fly-casting experts; the fattest bluegills seem to be right under the densest bushes.

When we speak of the Neuse River, it is next to impossible to generalize about the fishing since this stream covers so much territory and has such varied angling conditions present. By localizing our brief discussion in the lower one-third of the River, we are covering some of the best of its fishing. Like many of the other major rivers of North Carolina, the Neuse is subject to extreme water conditions including some mighty muddy water. In the main river itself, these conditions mean the difference between good fishing and none.

Although the Neuse has a good game fish population over much of its length, it is the catfish that sustains many anglers here. And many of these tasty scrappers are going to waste because fishermen either don't realize the fish are there, or don't care.

Perhaps it's the many smaller tributaries to the lower Neuse that have the best fishing. Again, the creeks are often short and narrow, but have mighty fine fishing. Bass, bluegills, pickerel, and others are abundant in the streams near the Havelock area. It is a matter of exploring here, and a small boat is very helpful. If the winter is mild, fishing can be excellent right through December and January.

Bypassing the White Oak River, we come to the wide, New River, running the full length of Onslow County. Much of the lower portion of this big stream is affected by tidal action and blends into the brackish waters below Jacksonville. It is the rivers and creeks entering the main river that make most of the angling news in this section. There are literally dozens of branches and smaller branchlets that have fine fishing, particularly for bluegills, pickerel, bass and fliers.



A small, stable boat and a matching outboard help cover the endless, winding rivers of the Coastal Plain. Watch for stumps and other underwater obstacles.

Low water or a strong north or northwest wind which pushes the water out, makes fishing in the upper branches a bit difficult. And if the water is too high, the fish seem to be put down or move out into the surrounding swamp and don't do their best at biting.

Using our thumb-nail sketch approach to the New River, it might look like this: Best times: March through May, and October through November. Best times of day: varies from season to season, generally early morning. Fish most likely to be caught: pickerel, bluegills, warmouth, largemouth bass. Productive methods: popping bugs near brush and vegetation; spinners deep for pickerel around vegetation; black and red worms for bass.

THE complex river systems made up of the Northeast Cape Fear, Black, South, and Cape Fear, all meeting to sweep past Wilmington, cannot be adequately "summarized" and boiled down to a few words. The Northeast Cape Fear has miles of wilderness water winding through swamps and woodlands. It is very dark water and has its share of roughfish . . . grindle, suckers, carp . . . but a good population of game fish, too. It can be a moody river, reluctant to give up its secrets on how to make good catches. Or it can be on friendly terms and yield amazing strings of bluegills, fliers, warmouth, pickerel and bass. If surface lures like the little popper fail, many anglers turn to some sort of bait. Crickets are usually quite good, especially for bluegills and other sunfish. Lively minnows about three or four inches long account for their share of bass. Gar and grindle may sample this live bait too, and a big blackfish can give you a real tussle.

Although it is not famous for them, the Northeast Cape Fear harbors some big striped bass during the late winter and spring. It is doubtful if they find spawning grounds to their liking here, but they will swat a big bucktail jig every now and then.

South River, which flows into or becomes the Black River near the Sampson-Pender County upper tip, is a good consistent fish producer, as is the Black, and they can be discussed simultaneously for all practical purposes. The water is dark, as you might suspect, and "typical" of this meandering, swamp drainage stream type. It is difficult to determine the productivity of such streams, but it is generally acknowledged that they aren't tremendously rich by many standards. However, the fish growing season is quite long and spawning areas adequate. Food habits of the fish in these streams may be considerably different than those of the same species in Piedmont rivers. With this in mind, anglers visiting the black waters of the Coastal Plain should come prepared to try local methods before heading home.

The Cape Fear River from its Piedmont source to the end of its journey at Smith Island, contains some very good fishing, some that's just fair, and much that is dismal. The river has its problems of turbidity, pollution, heavy navigation, dams and locks, and so forth. Some of these "problems" may be entirely necessary evils, and in a case or two, may be indirect aids to the fisherman.

Certainly the tubidity helps no one,

and the pollution eventually must be cleared up. Presently they both restrict fish production in the Cape Fear. The navigation only indirectly hinders good fishing. The dams and locks are to be reckoned with by fishery managers, particularly when it comes to migratory fishes such as shad and striped bass. Various means are being tried to allow more of these fish to pass upstream so that they can spawn.

Most of the Cape Fear has its best fishing in the spring and early summer, although resident fish populations remain fair all year round. Certainly the catfish population is going unexploited in the Cape Fear and could provide some good fishing.

One small creek entering the Cape Fear some 8 miles South of Wilmington should be mentioned. This is Town Creek which helps drain a large Brunswick County swamp. It can have some excellent robin, bass, flier, and even striped bass fishing in the spring. It can be floated fairly successfully from just above Highway 17 bridge to N. C. 133 bridge.

The Lumber River is rated by many as the top bluegill-robin stream in the State. It is a very productive river and certainly a picturesque one. If you are "a bream" fisherman, it is worth investigating. Best times: late March through May. Best times of day: dawn, late afternoon. Fish most likely to be caught: bluegills, robin, flier, warmouth, bass. Productive methods; small surface flyrod lures; small spinners; crickets and worms fished near the bottom in summer.

PERHAPS it is because they look so "fishy," but the mill ponds of the Coastal Plain hold quite an attraction to many fishermen. Not all these impoundments live up to their looks, and many have long since outlived their former reputations. Yet many continue to produce some fine fish. It may take a bit of selecting, but you should be able to find one that will offer some satisfying angling if you stick with them. Lumping them together, the schedule might look like this: Best times: March through June; October and November. Best times of day: dawn, late afternoon; midday for pickerel. Fish most likely to be caught: flier, pickerel, bluegill, bass, crappie and yellow perch. Productive methods: small reflex spinners near weed beds; surface lures just at dark; crickets and worms deep during the summer.

Much of this fishing is available from the banks, but a small, stable paddle boat is very helpful. Be careful of wading these ponds.

Currituck Sound is a complete book by itself. Depending on whether you've "hit it" or not, you either think it is the most fabulous bass fishing in the U. S., or just another highly over-rated piece of water. Some day we will have time and space to give it a spread, but right now, this may help: Best times: March, April, or May, depending on bass spawning. Best times of day: midday if the water is still cold; dawn and dusk after it warms up. Fish most likely to be caught: bass, bass, and more bass. Actually Currituck has some nice bluegills, pumpkinseed, white perch, pickerel and even a scattering of stripers. Productive methods: popping bugs, surface plugs, near vegetation (a guide will be very helpful the first time or two), spoons and porkrind in the vegetation. Minnows are excellent the year round. The black worm is catching on.

We will pass up Lake Phelps in our haste, but it has some fine bass, some bluegills, and an occasional huge crappie. Pettigrew State Park on its north shore is a picturesque spot to camp.

East Lake, north of Manns Harbor should rate right with Currituck for bass fishing and certainly surpasses it for panfish. Check with Stanford White at Manns Harbor for full details. Alligator River is another mecca for the follower of the black bass, and can be terrific. It is BIG water, however, and you should have plenty of boat under you.

Mattamuskeet as a fishing spot still surprises many anglers. It is a temperamental rascal, but has excellent fly fishing for bass and bluegills. It is one of the few spots that we would recommend a guide for sure. The water is very shallow and the bass are often concentrated in restricted areas. Best times: March, April, May; late September and October (it is closed to fishing during the waterfowl season). Best times of day: late evening (or whenever the wind isn't blowing). Productive methods: almost all surface lure fishing. Try the canals around the lake, too. Charley Carawan will help you.

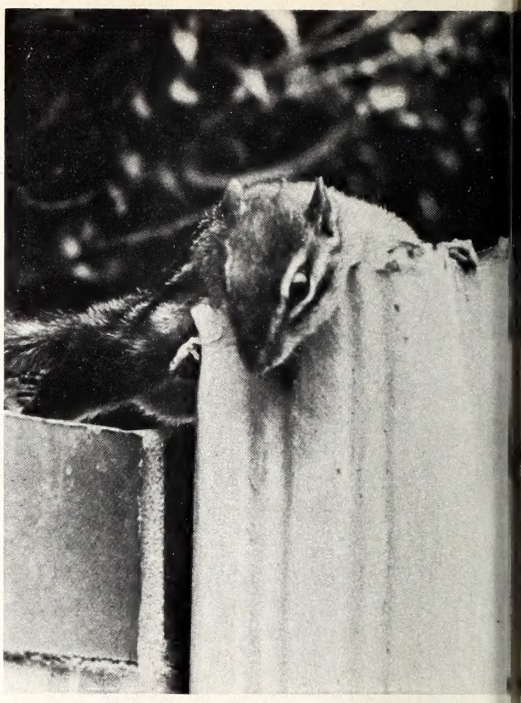
Lake Waccamaw is without doubt the best white perch lake in the State and can produce some fine early-season crappie fishing too. Fish the weeds around the edges. Although the Bladen Lakes have some fair fishing, you will likely do better elsewhere. Those who know it and are willing to spend some evening hours, catch bass consistently from White Lake.

It is obvious that we have skipped some mighty fine fishing spots in our whirlwind tour of the Coastal Plain. This section perhaps has the most consistent, week-in and week-out fishing in the State. However, it is the most subject to the whims of the weather. Winds particularly can completely ruin the fishing for several days. Prolonged rains or drought seem to affect it, too. But when conditions are "right", the fishing is hard to top . . . anywhere.

An "average" bass from Mattamuskeet is inspected by a flyrod angler. Early spring and fall provide good bass-bugging here.

Chester Chipmunk

Photo feature by David M. Brinning



CHESTER Chipmunk and his mate, Hester, are eastern chipmunks who live in an elevated brick planter which is part of a residence in southeast Charlotte. The planter contains several boxwood bushes and rises from four feet above the level of the lawn. The entrance to Chester's burrow is cleverly concealed in a boxwood bush, leaving no tell-tale heap of excavated earth from his den to be seen, as he has carefully spread it out among the boxwood bushes.

With his ears erect and tail extended, Chester scurries to the open end of a broken gutter drain pipe. Pausing here a moment, he casts about to see that no danger is lurking below. Chester sounds that all's clear with a high pitched chirp and dives head first into the broken drain pipe. Plummeting vertically downward four feet, turning as the drain pipe curves out horizontally, Chester shoots out the drain spout a distance of about twelve inches, thus getting a running start out across the lawn.

However, this time when Chester looked about before diving into the drain pipe, he saw a strange-looking device pointed in his direction. Chester had never seen a camera or a tripod before and this made him slightly uneasy. Therefore, instead of allowing himself to be jettisoned out the spout at the botom as he likes to do, he checked his descent in the drain pipe and at the bottom crept forward, cautiously peering out the end of the spout to see if the strange object was menacing his safe departure from the drain. After several minutes, Chester decided it was safe, leaped down and scampered across the lawn emitting a loud chirp as he went.

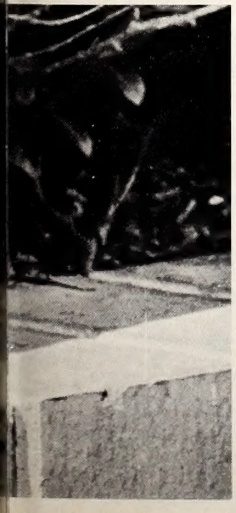
Chester's domain covers almost all of the front yards in the block, although his cousin, Charlie Chipmunk, will chase him back if Chester ventures too far up the block, for that's part of Charlie's territory and he jealously guards it, peering out from his home in the base of a birch tree. Also, down from Chester lives another chipmunk, Chauncey, who doesn't like his territory infringed upon either, and he watches the goings on from the vantage point of his home in the front lawn of a residence down the block.

Although timid and wary, Chester is full of curiosity and enjoys investigating trees and all their inviting branches. Balancing himself with his tail around one branch, Chester is caught by the camera as he prepares to leap to another branch.

With a mouthful of seeds and grains stored in her cheek pouches, Hester is heard as she struggles to navigate up the drain pipe to the planter box above. Finally she succeeds and is seen clutching at the top of the broken drain pipe looking about to see if it is safe for her to emerge topside. Chester, on the other hand, will bound out of the top of the drain pipe, scurry quickly to the cover of a boxwood bush in the planter, then before going to the entrance of his den, back-tracking, he will creep out in the cover of a shadow to see if anything is following him.

Chester's greatest nemesis is Mouser, a cat who lives two houses away. Mouser gets great delight out of chasing Chester and will try to sneak up on him. Chester will sense the danger and bound off to the safety of the drain with Mouser in hot pursuit, even pawing at the drain as Chester trys to climb out of reach. Not too long ago, Mouser almost caught Chester this way and this apparently made a big impression on the little chipmunk, for now when he is out gathering food and sees Mouser, whether Mouser sees him or not, Chester races for home, charging as a blur into the drain spout, clambers to the top, pops out and into the boxwood bushes. Chester can be bold and confident when there is a safe retreat at hand, and in a few moments, he will peek out from the boxwood to see if Mouser has taken up the chase.

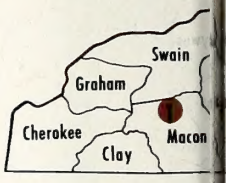
Chester's daily routine of shooting down and out the drain pipe, then scampering off on forays for food, investigating trees, holes, crevices, or anything that needs investigating, and if Mouser's luck doesn't change, will continue until winter. Then Mouser will stay indoors and Chester and Hester will enter their burrow to indulge in a short torpid sleep, however, remaining awake most of the time, but staying down below eating the seeds, grains, nuts, etc., they have stored up all year.



Mourning Dove Management Areas

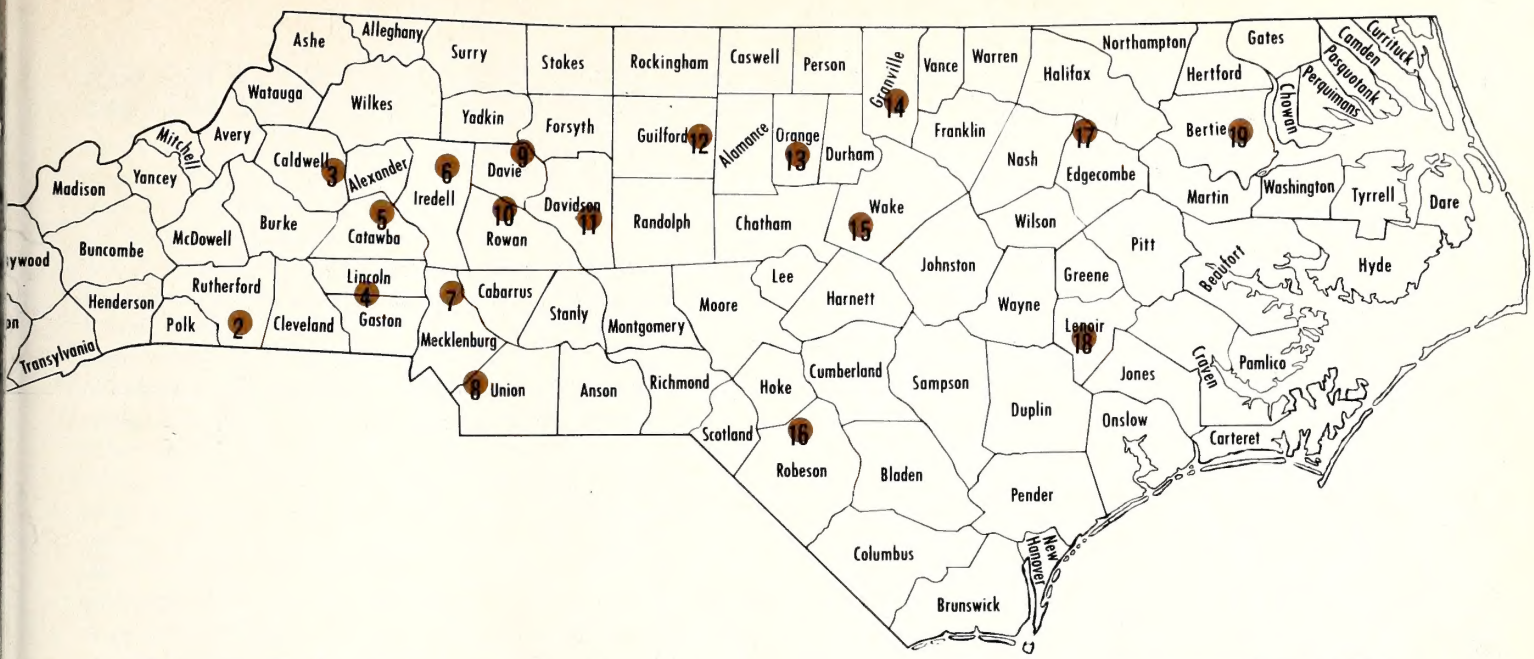
1964-1965

These are privately owned lands which the Wildlife Commission is managing for public dove hunting. Shooting is permitted from noon until sunset each Saturday and Wednesday during the open seasons.



This is a section of the browntop millet field on the Robeson County area. The grain should ripen and begin to fall before the early dove season. The ripening seed heads are shown below. Conditions look good for attracting doves in most areas.

1. **Macon County**
   The W. C. Burrel Farm, comprising approximately 400 acres of land, five miles northwest of the Town of Franklin on county road No. 1372 (Burning Town Road) at intersection with county road No. 1379.
2. **Rutherford County**
   The Wilbur H. Hayes Farm, comprising 700 acres of land approximately 2.5 miles south of the Town of Harris on county road No. 1115.
3. **Caldwell County**
   The Mary Fowler and Ted A. Poovey Farms, comprising 317 acres of land approximately four miles northeast of the Town of Granite Falls on county roads No. 1751 and No. 1745.
4. **Gaston County**
   The Dan A. Lynch Farm, comprising 112 acres of land approximately three miles west of the Town of High Shoals on county road No. 1612.
5. **Catawba County**
   The Francis R. Sigman Farm, comprising 210 acres of land approximately six miles northeast of the Town of Newton and 2.5 miles south of the Town of Claremont on county road No. 1722.
6. **Iredell County**
   The James Farms, Inc., comprising 475 acres of land, approximately one mile northeast of the City of Statesville on



Oakdale Circle (county road No. 2322) which turns off old U. S. Highway No. 64 near its intersection with Interstate Highway No. 40.

7. **Mecklenburg County**
The Fred A. Smith (Ludwig) Farm belonging to King's Grant, Inc., of Charlotte, N. C., comprising 207 acres of land in Huntersville Township, approximately five miles east of the Town of Huntersville and 11 miles west of the City of Concord on N. C. Highway No. 73 at the Mecklenburg-Cabarrus county line.

8. **Union County**
The R. A. Hudson Farm, comprising 200 acres of land in the Sandy Ridge Township, approximately 17 miles south of the City of Charlotte on N. C. Highway No. 16, then approximately one-fourth mile west on Morven Road (county road No. 1316).

9. **Davie County**
The W. S. Spillman Farm, comprising 55 acres of land, approximately three miles northeast of the Town of Farmington on county road No. 1455, at the Yadkin River.

10. **Rowan County**
The Joe W. Hall Farm, comprising approximately 400 acres situated in Cleveland Township, approximately two and one-half miles north of the Town of Cleveland on Baker Hill Road (county road No. 1957) and north of Foster Road (county road No. 1973).

11. **Davidson County**
The J. C. and Reece Crouse Farm, comprising 182 acres of land in Emmons Township, approximately six miles north of Denton on N. C. Highway No. 109 to Cid Road (county road No. 2318), then east approximately two miles to the farm on the north side of Cid Road.

12. **Guilford County**
The Guilford County Farm owned by the County of Guilford, comprising 756 acres of land, approximately ten miles northeast of the City of Greensboro, and two miles north of the Town of Gibsonville on county road No. 2740.

13. **Orange County**
The Frank Perry Farm, comprising 400 acres of land, approximately three miles north of the Town of Hillsboro, between U. S. Highway No. 70 and N. C. Highway No. 86, on county road No. 1306.

14. **Granville County**
The E. B. Averette Farm, comprising 400 acres of land, approximately six miles south of the Town of Oxford, between U. S. Highway No. 15 and N. C. Highway No. 96, on county road No. 1618.

15. **Wake County**
The J. H. Aiken Farm, comprising approximately 450 acres of land, 15 miles southwest of the City of Raleigh, and two miles north of the Town of Fuquay-Varina near Needmore on county road No. 1399.

16. **Robeson County**
The Humphrey Brothers Dairy Farm, comprising approximately 400 acres, two miles northwest of the Town of Shannon which is between Red Springs and Lumber Bridge on N. C. Highway No. 71.

17. **Edgecombe County**
The Bill Dail Farm, comprising 600 acres of land, four miles east of the Town of Leggett on N. C. Highway No. 97 and one mile south on county road No. 1500.

18. **Lenoir County**
The C. N. Stroud Farm, comprising 200 acres of land, approximately eight miles southwest of the Town of Kinston on N. C. Highway No. 11, and one mile west of the Community of Albritton.

19. **Bertie County**
The Walter G. Evans Farm, comprising 130 acres of land, nine miles south of the Town of Colerain on N. C. Highway No. 45, one mile west on county road No. 1355, and .7 mile south on Pierce Road.

Coordination of Conservation Programs

by Ira N. Gabrielson
President, Wildlife Management Institute

MY topic, "Coordination of Conservation Programs," is a complicated and difficult one to which I can contribute little that is not already known. In the long run, program coordination is dependent upon human beings—upon their good will, their confidence in each other, and their objectivity in dealing with the problems that occur.

There are many kinds of conservation programs, and the term "conservation" often has been applied to projects that are anything but good management of our natural resources.

First, we have the federal agencies dealing with water, soil, forestry and wildlife. In the past, there has been too little coordination of these programs. Each agency, especially the huge ones such as the Bureau of Reclamation and the Army Corps of Engineers, went their merry way without any consideration for other resources or other interests. There has been more coordination in recent years, due partly to public pressure arising from better understanding of the issues involved. Much of this progress has been achieved through interagency committees, and there has been real cooperation and effort to resolve conflicting viewpoints and to develop coordinated programs. Great credit should be given to the individuals who have worked devotedly to achieve such results.

One of the serious defects at present is that the agencies which propose vast and complicated developments are the ones that recommend them to Congress, do the construction, and manage and maintain them. In other words, the agencies are the prosecutor, judge, and executioner. This makes coordination difficult.

Sometimes even the smaller agencies display the same isolationist tendencies. An example of this was the original proposal for locating the extension of the Blue Ridge Parkway. As recommended, it would have destroyed much of the Appalachian Trail.

Fortunately, a second hard look was taken and the result is a model example of the coordination process at work. Appalachian Trail Club officials and representatives of the Bureaus of Public Roads and Outdoor Recreation, National Forest and Park Services made numerous field surveys covering many miles to locate a route for the extension which would preserve much of the semi-wilderness of North Georgia. The Trail Club, the National Park Service, and the U. S. Forest Service reached an agreement for the location of the Parkway extension through the mountains of Georgia.

A significant portion of the present Appalachian Trail has been preserved on the Blue Ridge, where hiking sightseers can still tramp along the main ridge, undisturbed by the motoring public. The new trail route will be even more attractive and inviting to wilderness hikers.

This compromise was reached around a conference table after detailed on-the-ground study of many alternate routes by representatives of all agencies concerned. It is a fine example of how a parkway for the pleasure of the motorist can be planned with minimum destruction of the remnant of mountain wilderness that people want to visit and enjoy.

The passage of the first Coordination Act was a small start toward coordination many years ago. It was a weak and ineffective law, but it was a start. It has been amended several times since and is much more effective now. But it could stand a great deal of strengthening.

In recent years there have been various interagency committees dealing with subjects such as water and pesticides that have done some good work. The trouble is that the committees consist of representatives of the contending agencies, and whatever comes out of these committees is apt to be a compromise which may be disastrous to some of the interests involved.

Theoretically, the President of the United States is the coordinator. But no President has adequate time to devote to coordinating conflicting theories and proposals in the natural resource field. This is true no matter how active an interest the President may have. The Budget Bureau also is supposed to do some coordinating, but outside of the field of coordinating budgets, that agency's recommendations often betray more ignorance than understanding of the basic problems involved. Many examples can be cited to show that Budget Bureau decisions usually reflect more financial than resource knowledge.

To get coordination on national programs is complicated enough in every country with which I am familiar. However, we have an additional complication in our governmental setup, because there are 50 states with sovereign powers over what happens within their boundaries. In recent years there has been much criticism of the fact that the Federal Government has invaded the realm of the states. An example is in water pollution control. The great cry—especially from the polluters—has always been that this is a local and state matter. And only within recent years have the conservationists been able to get the Federal Govern-

Jack Dermid

Clean water is everybody's business. Interagency cooperation will help with this nation-wide problem.

*Presented at the Outdoor Roundup, Fontana, North Carolina, June 12, 1964.

ment to take an active part in water pollution control, as a result.

The bald truth of the matter is that the states have had the power to control pollution for the entire history of the country. The mess in most of our inland waters has forced some federal action, and it will force more unless the states substitute achievements for talk in this field. Water pollution control is probably the most serious single conservation problem in the nation today, and public opinion will bring about greater extension of federal authority if there is no improvement in the immediate future.

There are many cooperative programs between federal and state agencies and almost innumerable individual agreements covering every conceivable facet of resource management. An illustration with which I am most familiar is the Federal Aid in Wildlife and Fish Restoration programs. These two programs distribute federally collected excise taxes to the states under formulas fixed by the Congress for approved projects. These two similar programs have worked as well as any and better than most federal and state coordination programs. There have been disputes between state and federal administrators at times over interpretation of what are reasonably clear-cut laws. The Wildlife and Fish Restoration programs, however, are fair examples of how federal and state activities can be coordinated. They furnish guidelines for better coordination and cooperation in many fields.

In most states there is conflict and lack of coordination between state and local programs whether they be county or city. Sometimes a state finds itself in the position of fighting the federal government, because it is invading states' rights while the state in turn seeks to override the wishes and desires of the citizens of a county or city. Again, it is fair to say that states tend to invade the prerogatives of local jurisdictions most frequently when these jurisdictions fail to take action on their own problems. People in the communities will turn to the state for relief from intolerable, or from what they think of as intolerable conditions, if they cannot get help at the local level. This, in turn, is equally true of the desire of citizens for strong federal leadership in fields such as pollution control and pesticides, two highly controversial subjects at the present time. This demand arises mostly because the states either do not have adequate laws or they do not effectively enforce laws they have. Had this not been true, it would have been impossible to pass the original federal pollution control act and to get several strengthening amendments through Congress.

Jim Lee

Misuse of our forest areas can often be minimized by closer contacts between the agencies responsible for them.

Here I outlined a few of the Southeastern Association Cooperative Studies. In the federal field the one possible answer that has been suggested for securing better coordination is in establishing a small committee of outstanding citizens to study natural resource proposals and make recommendations to the President for possible transmission to the Congress. Such a commission should be composed of citizens who have a broad interest in resource problems and who have not been and are not now connected with any of the agencies making the proposals. The present interagency committee system is weak, because each committee member is more or less obligated to represent his agency's viewpoint. A broad review of resources proposals in the public interest is needed instead.

There has been general agreement among national conservation leaders for many years that a high-level agency of this type is needed. It has not been possible to get Congress to act on the suggestion, because the Congress itself could be a coordinator of federal programs if it had both the time and the inclination in certain resource areas, but it seldom has the time for most of them.

An exception, of course, is the big water programs which are becoming political pork barrels. This has always been true, but the "pork barrel element" is becoming more and more dominant, in my opinion. It is questionable whether the Congress ever will have the time or inclinition to pass judgment on the merits of all the proposals that are advanced for resource development. Too often, the judgments of Congress are dollar judgments.

From the standpoint of the citizen and the private conservation organization there is little that can be done to bring about better coordination except to make a big fuss whenever an obvious mistake is made or when one interest is being favored over values that are important to the public. This kind of pressure has been the only thing that has brought such progress as has been made in my lifetime. There is still a long way to go.

All conscientious persons should work diligently for better coordination between private conservation organizations. There are almost innumerable organizations. Some have limited and specific objectives; others have broad objectives. Several attempts have been made in the past to gather these varied groups together into one big conservation organization. Each has failed and probably will continue to fail for the simple reason that human beings have diverse interests, diverse minds, and diverse ideas. It seems likely that we will continue to have many organizations with specific objectives. The variety of interest undoubtedly will attract more people and get more enthusiastic support than any single group with broad objectives could possibly obtain.

These organizations must learn to work together on major programs if they are to be effective on a national or state scale. Much of the progress that has been made in the conservation field during the past 25 years is the result of cooperative effort. The groups that have learned the benefits of working together hold meetings to discuss problems and possible solutions whenever there is need. If a consensus is reached, then all work together to obtain the objectives. Such successes as we have in passing national conservation legislation have been due to these efforts.

For many years conservation organizations felt free to

work openly for the enactment of legislation in the public interest. The passage of the Lobbying Act and the Supreme Court interpretation of that act abruptly limited the field in which many conservation organizations had been working. This change resulted in the creation of the Citizens Committee on Natural Resources, which is an effective, registered lobbying organization operating in full compliance with existing laws.

The existence of such a group however, does not eliminate the necessity for regular meeting among conservationists on situations where legislation and strategy are involved. The progress in national conservation legislation has come largely as a result of mutual understanding and confidence among the conservation leaders. We have new problems today, and there will be more tomorrow.

For example, the proposed Appalachia program is an effort to bolster the economy of a depressed region, and as an objective, no one could possibly quarrel with it. There is a growing concern, however, that the program now before the Congress has not been carefully thought out.

Much of the program as now proposed is aimed at producing economic return from mass recreation and tourism. Few of the Appalachia subcommittee reports allude to the preservation of the natural ecology and wilderness which are so important an aspect of recreation in the Appalachian region.

While I doubt that this message was heard—or will be heeded—by the engineers and agricultural planners, the facts indicate additional emphasis should be placed on wilderness and wilderness-type recreation in Appalachia. For example, 6 million tourists who traveled the 469 miles of the present Blue Ridge Parkway in 1961 were estimated to have generated $60 million in business in the Appalachia area. But the 1.9 million fishermen and 2 million hunters enjoying sports in the undeveloped wilderness parts of Appalachia in 1960 generated more than $350 million in goods and services.

As someone put it after reviewing the highway and transportation subcommittee reports, roads, highways and associated scenic overlooks are planned for practically every significant ridge in the southern Appalachians. Unless carefully controlled, erosion from highway construction will do considerable damage to the unique trout and smallmouthed bass fisheries in the area. While roads and trails are needed for access, these roads and trails must be of the right kind and in the right places.

Recent studies by the Southeastern Forest Experiment Station and the N. C. Wildlife Resources Commission show that additional access by woodland trails is an important factor in increasing deer and small game harvests (March, 1964, Wildlife, Ed.) The Appalachia Agricultural Subcommittee report advocates a program of pasture rehabilitation which will produce a net increase of 863,000 acres of pasture. The same subcommittee suggests that considerable income can be realized through management of wildlife for hunting or fishing on the thousands of small private farms in the area. Pasture generally is poor wildlife habitat except for certain specialized forms.

Construction of 6,700 detention reservoirs in half of the Appalachian watersheds, also is recommended. The agriculturists believe that detention reservoirs would have significant fish and wildlife values while providing flood protection to 3.8 million acres of Appalachia's flood plains. Here again it is obvious that the Agriculture Subcommittee is thinking of mass recreation. Many of these mountain watersheds are on national forests, a large proportion of which provide semi-wilderness trout fishing. Nearly 800 anglers fished the head waters of the French Broad River in the Pisgah National Forest one weekend this spring. The agricultural report ignores the destruction that will occur to this resource if a wholesale program of small detention reservoirs is substituted for this mountain type of fishery.

It should be pointed out that half of the people who visited the 11 million acres of national forests in Appalachia are interested in dispersed wilderness recreation. They are not attracted to scenic highways, the developed campgrounds, or the crowded lake shores. They go to the Appalachians for isolation.

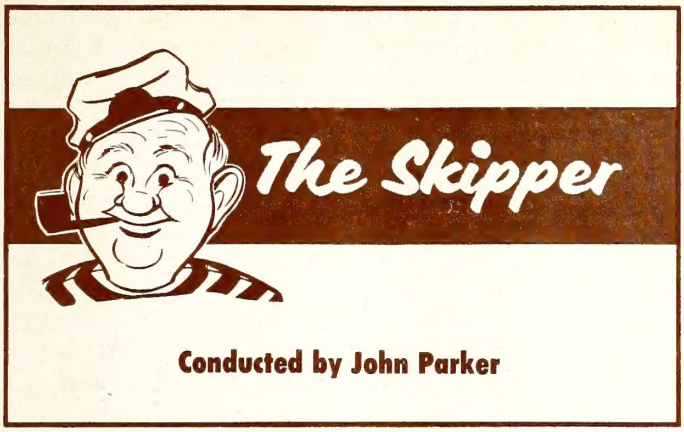
The recreation features of the proposed Appalachia program are overbalanced toward mass recreation. The Recreation Subcommittee's report makes this very clear. It indicates plainly that water and highways are keys to commercial recreation development. I would point out again that Appalachia's wilderness and semi-wilderness recreation resource is of immense monetary value. It can be destroyed as easily by impoundments, highways, and mass recreation as it can be by subdivisions and industrial developments.

The Appalachia Timber Subcommittee recommends public acquisition of submarginal farms where there is no reasonable future for agriculture. Incentives also are recommended to develop a broader base for marketing of forest products. Both of these good recommendations will enhance the attractiveness of Appalachia to the dispersed recreationist. Harvest of forest products is essential to maintenance of wildlife populations that recreationists seek with binoculars, cameras, or sporting firearms.

Too much emphasis has been placed on roads and dams in the Appalachia plan and not enough attention given to the two resources which already exist. These are the forestry resources and the opportunity for dispersed outdoor recreation. Some attention is given in northern Appalachia to the problems of acid mine wastes which render potentially useful waters more or less sterile and unattractive and which would do the same to any reservoirs built on the streams. Some attention also is given to rehabilitating old strip mines and to improving the timber types and stands. These projects could furnish a continual base for long-term employment and development. They will provide many more jobs of the kind that people in Appalachia are qualified to do than will the development of a big highway program or the building of dams, both of which call for an increasing amount of machinery and decreasing amount of ordinary laboring skills.

In my judgment and in the judgment of most conservationists with whom I have talked, the emphasis in the Appalachia reports should be reversed. Rehabilitation of forest lands, including the addition of marginal lands, to national forests and ridding the stream of pollution furnish a much sounder basis for developing the economy of Appalachia than the proposals that are being considered.

Appalachia, in many areas, is a fragile and abused land, with its forest ransacked, lands stripped, and streams polluted. Many of its people and its communities are poor, as a result. No federal program is going to make a long-term contribution to Appalachia, if the restoration of its resources is ignored. A sound program for Appalachia will require from each of us the willingness and the ability to fully coordinate all of the interests that are involved.



Conducted by John Parker

"THE blues are in." This expression of fact is every bit as important to the fishing scene of today as, "thar she blows", was to the whaling industry of yesteryear. As this news spreads across the state, it starts a parade of trailered boats stretching clear back to the Blue Ridge. Blues, spanish, kings, spring, summer or fall—it makes little difference; for when the fish are in, the boats go out.

Taking a run out the inlet or working in and around inlet and shoal water is all a part of a day's outing to the experienced charter boatman, yachtsman and yes, the outboarder **if**—. Taking into consideration the weather, the outboarder's experience and the type of boat (preferably one with a 20" transom with well or a welled in rig and at least sixteen feet long), the outboarder can be relatively safe. Two or three hundred pounds of motor, gasoline and accessories make the stern of the modern outboard with the standard 15" transom very vulnerable, especially in following seas or in the event of a power failure.

At any rate, the fellow who on occasion ventures through the inlet in the standard runabout is gliding or surging (whatever the case may be) into a different realm of boating. Whether he should be out there in the first place is another story. The fact remains that more and more outboarders and those with small inboards are taking advantage of the fishing on the sea side of our outerbanks. Trolling in these waters presents the angler with unmatched excitement. Combine the pleasure of handling a boat on open water with bringing aboard dozens of salt water scrappers that have fallen prey to a Clark, Pet, Drone spoon or whatever, and you are in for a day long to be remembered.

Occasionally the fish cooperate with the fellow in the small boat and come inside the inlet. This is usually the exception rather than the rule, so before he knows it, Mr. Needs (more experience, and there are a lot of us in that category) has the bow of his small "all purpose boat" headed toward the open sea. About half way out he may begin to realize that his boat is quite small and the ocean is quite large. But he continues on. The lures that pull him on range from the purring of a smooth running motor at dockside along about the first light, to the sound of the guy in the trolling seat yelling "fish on". Odors, sights, and sounds are all part of that come-hither beckon.

We made it, he thinks, all 14, 16 or 18 feet of us. Where do we go from here? It is a good day and time flies. After a few runs down by the fishing pier, once around the point and over by the jetties, it is time to head in. Everything went fine. Well, that one comber did slip up on us but luckily it broke after it passed under. We got our fish, so let's call it a day.

In order to make a point, we must obviously follow Mr. Needs into a little difficulty. Several boating accidents in midsummer involved small craft being swamped in one of our inlets. Will Mr. Needs have to fill out a report? He could make his run back through the inlet and be home free but it looks as if that squall line has caught up with him so here's where the "fun" begins.

The following could have been prevented **if** he had been keeping a close watch on the building weather or **if,** by scanning the area occasionally, he had observed other boats heading in earlier and **if** he had followed suit. Let's call this rule number two. Rule number one would have included checking the weather forecast before getting under way or carrying along a portable radio and tuning in at forecast time. Forecasts may not affect your immediate actions but do help in planning your day. Present weather, of course, does affect your every move in a boat. Obviously in adverse weather, the water of which we have been speaking is certainly no place for the small boat.

We will now change places with our friend and see if we can get back in one piece. First, have everyone put on a life jacket (this is no place for seat cushions) if you haven't already done so. Best bring out the rain gear also. Oh, you say that's in the car along with the extra anchor? All of this goes back beyond rule number one and deals with a properly equipped and properly maintained boat. A dependable, well-tuned motor, plus positive steering is a must out here. This is not a place for a steering cable to break or to be dealt a blow from some other malfunction.

Next, stow the loose gear and in general secure your craft. If the boat is equipped with a convertible top, it would be best to drop this as it may hinder stability in a high wind. Wrap the valuables in plastic, or in some other way protect items such as cameras in the event that you take on water, or worse, if you capsize. Put the survival gear where you can get to it in a hurry.

The transition from sound waters to ocean conditions must be preceded by careful planning. Make absolutely certain that your boat is ready and able to take it. And how about you?

Prepare for the worst and go over with the others aboard just what you will do if your sturdy craft gives up and settles in the drink. If the boat is swamped, indeed stick with it unless you are being carried toward the beach and the breaking surf. If that be the case, then you had better bid farewell to your boat, the catch of blues, and with everyone looking out for everyone else (use a buddy system), start to work in through the surf in the best manner that you can muster. Let's hope we won't have to use this procedure.

Simultaneously with securing the boat, be planning your run in. If there are other boats in the area, converge on them as you go. If you recognize an experienced boater, such as a local charterman, stick with him at a safe distance. Remember that all boats do not react alike so you will not necessarily follow his every move.

During this entire operation the exactness with which you handle your boat, including throttle, steering and the maintaining of stability will determine whether you make it or not. The inlet was like a millpond when we started out but strong winds bucking that out-going tide have changed things. This is another point to consider. Remember that the wind usually picks up late in the morning or by midday. Try to time your return so that strong off-shore winds will not be opposing ebbing tides.

As you run in, keep everyone low in the craft and seated on the bottom if necessary. It will also help if someone hangs onto a bailer or bilge pump and keeps the craft as dry as possible. Water sloshing around in a boat adds to the stability problem and has a bad psychological effect on everyone concerned. Normally you will want to proceed slowly or as conditions warrant. This will reduce flying spray, pounding and will give you slightly more reaction time as each wave may have to be mounted differently.

During your run up the beach you may have to ride in the trough between the waves. Not an ideal situation, but if your boat will take it, fine. If the seas are not breaking, you may at this time, wish to increase speed. At all times stay alert. Just a slight throttle adjustment or turn of the wheel may prevent trouble. At anytime you observe a wave about to break at the boat, turn squarely into it and reduce speed. If conditions deteriorate, you may have to tack up the beach.

When you arrive at the inlet, again size up the situation. There may or may not be a definite pattern. If there is, you can better plan your move. Each inlet will vary with wind, tides, localized currents, etc. There are about two dozen inlets along our coast and anyone of these may change at least slightly from one trip to the next. However, local boaters or Coast Guardsmen assigned to a particular area will know the story on each. A talk with these folks before going out would be very helpful.

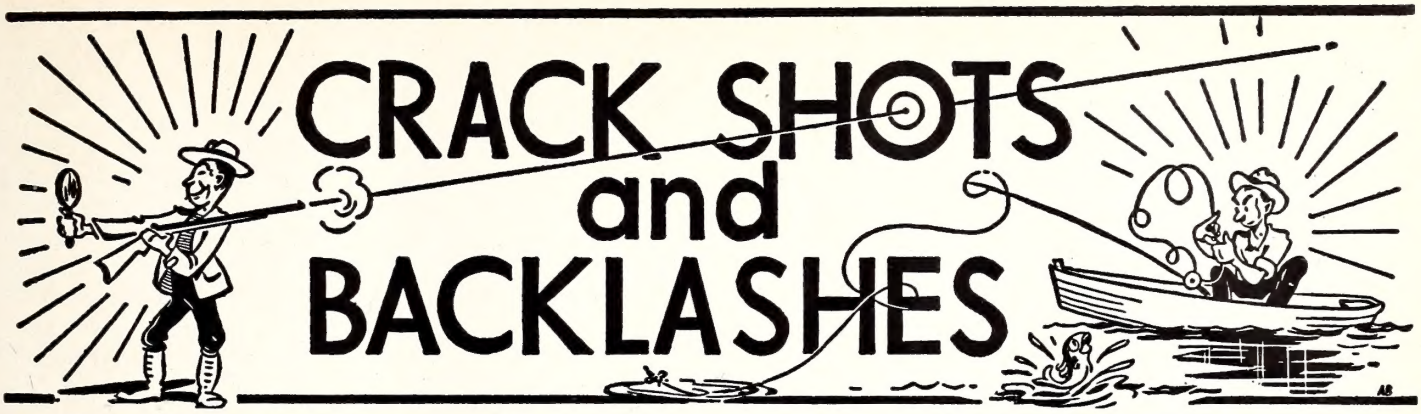
In making your run through you will want to stick with the channel markers, or at least follow the rule of thumb and stay in the darker water and out of the more turbulent areas. Enter areas of steep following seas at a time when these are lowest and furthest apart. In riding this type of sea you must keep your boat positioned squarely on the back of it with throttle adjustments. In other words, go as fast as the wave. If you go faster you will obviously go over the top or crest and swamp; and if you go too slow, the one behind will come aboard. The force of these seagoing steam rollers is constantly trying to turn you sideways or do some trick with your boat. You will soon learn to counteract these forces and you must, if you wish to stay dry.

Other particulars to watch for are cross waves which do not conform to the wave pattern. Steer around these if possible. Avoid driving headlong into any wave with force enough to bury your bow. Learn when your boat can be driven across the wave tops or when you must slow and take them as they come. This will depend on distance between waves as compared to boat length and so on.

There can be no set rule but the basics will apply in most cases and may prevent a lot of trouble. For more information on small boat handling in rough water you may want to do some reading in "Knight's Modern Seamanship," "The Complete Boating Encyclopedia" by Weeks, or "Piloting, Seamanship and Small Boat Handling" by Chapman.

Jim Lee

To describe a boating accident, even to show you photos of boaters in trouble often doesn't get the story across. It can happen to you, but it doesn't have to. The fall boating season can be a real pleasant time afloat. Don't make it your last one. Take it easy.



DEPARTMENT OF LETTERS TO THE EDITORS, FIELD NOTES, AND ITEMS OF INTEREST

Conducted By Rod Amundson

September 1 marks the opening gun on a long and generous hunting season in North Carolina. On the September 1 high tide the gunning season on marsh hens—clapper rails, Virginia rails, sora and gallinules—commences.

Close on the heels of this—at noon on September 12—the dove season gets under way with an increase of two birds in the bag limit over last year's 10 birds. Twelve doves are allowed daily this year, and most dove hunters, although glad of the increase, anticipate that the extra two birds may mean an extra box of shells to get them in the bag.

Nature has been generous this year in providing an excellent nesting and breeding season for upland game. Squirrels seem to be abundant throughout their range, and rabbits and quail are plentiful in most areas. The abundance of doves is reflected in the increased bag limit, a split season totaling 70 half days, and the legality this year of shooting over feed lots and newly planted grain fields.

Such big game as bear and wild boar may be expected to be in about the same supply as last year, with white-tailed deer being so plentiful in some areas that anterless deer hunts are being planned in several localities.

Where waterfowl are concerned, we cannot expect any sizeable increase in the season or bag limit on ducks, while coots and Canada geese will be at least as plentiful as last year. As usual, the supply of marsh hens on the coast and grouse in the mountains will far exceed the demands of hunters. As matters stand at the moment, bountiful nature and a sound wildlife conservation program seem to have combined to produce a good harvest—a harvest that everyone has an equal chance with every other to share.

BLACK BRANT
For North Carolina

Under "Brant," page 56 of Birds of North Carolina (1960), there is a prophecy, "NOTE: The Black Brant *Branta nigricans* (Lawrence) [174], Plate (7), is similar to the American Brant except its breast and belly are quite black and it has a white collar rather than a crescent patch. It is a brant of the Pacific Coast and is a straggler found on our coast."

George N. Lawrence first described this brant from one taken at Egg Harbor, New Jersey in 1846. Other specimens have since been recorded from Chatham, Massachusetts; Long Island, New York; and Cobbs Island, Virginia.

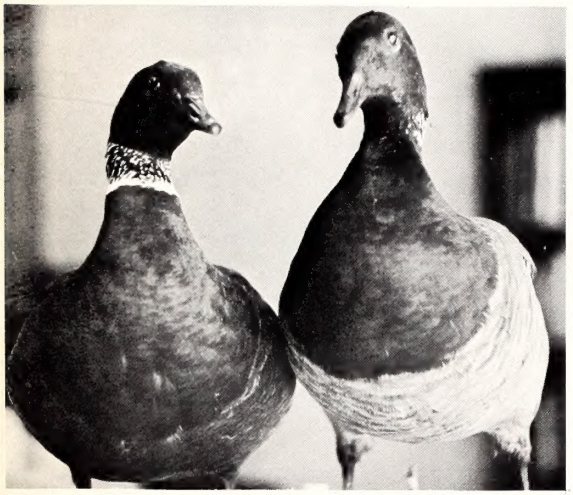
This bird breeds in the maritime regions of eastern Asia and northwestern North America—Siberia, northern Alaska, and northwestern Canada. This brant winters chiefly on the Pacific Coast to Lower California, with casuals noted from Wyoming, Utah, Texas and Hawaii.

The Bird Book prophecy was fulfilled on January 1, 1964, when veteran Coast Guard officer Eugene B. Pond, went "gunning" on Cove Banks, North Carolina. Three brant came to his decoys while he was outside his blind. As the birds circled again, he lay down in the grass and shot one out of the flock. He doesn't miss and his Chesapeake retriever

worked. He noted the bird's identity as the dog brought it in. This was easy because he had served a year in Alaska where he had hunted the Black Brant.

Mr. Pond gave this Brant to the State Museum where it is mounted for exhibit. Thus there is a tangible record and one more bird added to the North Carolina list.

Harry T. Davis



Teachers Note

DEAR SIRS: Enclosed is my check for $13.00 to pay for 26 one-year subscriptions to Wildlife magazine. These boys and girls are from the fourth grade in the Gamewell School. List is enclosed.

We are trying to teach conservation of our wildlife and will appreciate your help. If any member of your staff is available for a school visit next year, please advise.

My subscription to the magazine has been enjoyed by my class for several years. The children look forward to each copy. These subscriptions were given to boys and girls in our four sections of the fourth grade who had perfect attendance.

Jack Dermid and Bill Hamnett have both visited our Bird Club and school. We hope to have other visits from your staff. MISS HELEN E. MYERS, LENOIR

Right or Wrong?

DEAR SIRS: The other day I went fishing at Mr. Walter Smith's pond. The people fishing were my grandfather, my buddy and Mr. Smith. My buddy, grandfather, and I were using cane poles. Mr. Smith was fishing with a rod and reel. My companion and I could see crappies bedding in the water up close to the bank, and before the day was over we had five crappies. The way we caught these fish was in a very unusual manner.

Well, all we did was put our worms—we were using red worms—down in the water at the edge of the bank right at the fishes mouth. At first the crappie didn't pay any attention to the bait and he swam away; but before I knew it the fish came back and took my worm. I caught him, and my partner caught three crappies, and I caught two in the same way.

I would very much like to know if this is against the law? If it is, we shall not do it again.

Well, by the end of the day Mr. Smith caught three bream, my buddy caught three crappies and I caught three bream and two crappies, and my grandfather caught nothing!

The lake is located 12 miles north of Lumberton on the Tolarsville road. I live in Lumberton and my father and grandfather are both subscribers to your wonderful magazine. JAY BARRINGTON, LUMBERTON

This is a perfectly legal and quite effective method of taking many of the sunfishes (bluegills, warmouth, robin, as well as crappies). Once we thought that catching these fish off their spawning beds would harm succeeding fish populations; evidence is at hand now that this sort of harvest is actually necessary in keeping sunfish populations in "balance".—Ed.

Dilemma

DEAR SIRS: Don't you think the article in the May issue of Wildlife entitled "Nature's Dilemma" by Joel Arrington takes a lot for granted in setting forth the theory of evolution as a fact rather than a theory? I realize the purpose of the article may not have been to set forth the proposed theory, but it certainly does without leaving any room for questions about its accuracy. It is a mystery to me, how educators and scientists can claim to approach all life with an open and honest mind, and yet a few of them insist on promoting the theory of organic evolution as a fact when not one single shred of evidence has ever produced to sustain it. If it has I should like to know it. I refer to evidence and not some silly guess linked to another guess.

The reason I call your attention to this is because, as fine as your magazine is, there are many people who read it and like it who prefer to believe the Biblical account of creation, and it does not set well with them for an article to be written in their favorite magazine for their children and friends to read which would subtlety "con" them into believing a lie without question. It may be argued that they do not have to believe it. No, but the younger generation has a very faulty habit of believing everything educators say because they are educated. But please lets not accept a silly hypothesis as a fact just in the name of education. And if your writers insist on setting it forth, at least I beg you to see to it that they admit and submit that there is an opposing side; and that evolution is not, after all, the last word in truth. WILLIAM J. FOREHAND, CHADBOURN (Pastor, Penticostal Holiness Church)

Dear Mr. Forehand:

We appreciate very much having your fine letter of June 9, regarding Joel Arrington's article in our May, 1964 issue entitled "Nature's Dilemma."

You are obviously well-read and well-educated or you would not have questioned the motives of this article. We realize that our magazine reaches a large segment of the people of North Carolina, and know that they are of many faiths and many religions. Certainly none of us, and especially Mr. Arrington, would in any way wish to influence their thinking or belief.

You are undoubtedly aware that there is much scientific evidence that this world of ours is much older than literal interpretation of the Bible would indicate. Further being a student of the Bible, you may have some questions regarding the authorship of many of the books of the Old Testament.

Nevertheless, we believe that most of our readers accept the idea contained in th first vrse of the first Chapter of Genesis: "In the beginning, God created the heaven and the earth." His manner in doing so, and the length of time involved, will forever be a matter of conjecture and speculation among scientist and theologians alike.

Again, thank you for your letter. May we have your permission to use it in "Crackshots and Backlashes?"

Rod Amundson, Chief
Division of Education

Mysterious Disappearance

DEAR SIRS: This summer the song sparrows built their nests in the bushes at the front of our home. Two eggs disappeared from one nest and two young birds from another. We have quite a number of chipmunks around the place. Are they known to destroy eggs or young birds? ROGER W. PRATT, ASHEVILLE

Although they are classed as true squirrels, chipmunks live in burrows in the ground, usually at the base of trees. They occasionally climb trees when threatened by danger but prefer to disappear into their burrows.

Ordinarily, chipmunks do not feed on birds' eggs, and the presence of chipmunks and absence of eggs and young birds could be a matter of coincidence rather than deliberate predation.—Ed.

Sounds Easy

DEAR SIRS: I have just read George

Burdick's article on barefoot skiing and wish to add a few tips which might help the "barefoot-novice."

The method I prescribe for the beginner is different at the start. Once the skier is being pulled barefoot across the glassy waters, Mr. Burdick's instructions are adequate.

The start is similar to the start on shoe skis. The skier is in the water sitting on a ski (behind the shoe) with his legs extended and sticking above the surface. When the boat begins the skier puts most of his weight on the ski keeping his feet well in front of him on the surface of the water. (If they go under so does he.) He should hold on and "ride the ski" until the boat is going 30 mph or better. Then he just pushes the ski down from between his legs and experiences one of the most exciting thrills of his life.

I and other members of the Island View Shores Ski Club have found this method of starting easy for the experienced shoe skier or any determined person who knows his way on skis. JOHNNY REYNOLDS, GREENVILLE

BOOK REVIEW: The World of the Red-tailed Hawk by G. Ronald Austing; J. B. Lippincott Company, Philadelphia and New York, $4.95.

As a ranger with the Hamilton, Ohio, Park System, G. Ronald Austing has ample opportunity to observe the habits of the red-tailed hawk. As an objective-minded and sympathetic naturalist he is well qualified to record the natural history of the species. As a superb nature photographer he can document his findings with photographs which add immensely to the total effect of his reports.

The World of the Red-tailed Hawk is a remarkably absorbing book, largely because of the excellent photographs with which it is illustrated and because of the acute and sympathetic observations the author makes of the natural history of the red-tailed hawk through all the seasons.

The greatest enemy of this much-maligned predator is man, both from habitat destruction and from guns. As is true of every species which cannot adapt rapidly to change, the red-tailed hawk is suffering from the advance of civilization, with its accompanying changes in the countryside. Only one out of ten red-tails lives to acquire the red tail of the second year bird. Wanton destruction by rifle-wielding men depleats the population yearly by a large percentage.

This is one of the many photos which illustrate The World of The Red-tailed Hawk. **Many phases of the hawk's natural history are recorded on film by the author.**

Even after the volumnious efforts of conservationists to educate the public on the importance of predators in the biological community, there is still a too-large portion of the populace who either did not get the message, or what is more likely, do not care. It can be demonstrated that the damage to barnyard fowl caused by the occasional half-starved hawk that might swoop desperately after a chicken, is negligible. It is only the young bird on the verge of starvation or an old one unable to compete with the younger hawks that will occasionally rob the farmer. When natural food is available, red-tailed hawks will not take a chicken.

The author makes the point well when he states that all the lengthy arguments about whether the hawk is good or bad are largely irrelevant. It is neither good nor bad—it is necessary in its role of keeping the numbers of lesser animals in check, of weeding out the weak, degenerate, and diseased individuals.

This book is not a thoroughly exhaustive treatment of the natural history of the red-tailed hawk. It is not padded with charts and statistics in small type. It is a highly readable account of the observations of one man—a man whose work in conservation has taught him that the role of predators in a natural community is important to the rest of the members of that community, and that without predation, the community will not survive its burgeoning numbers.

Joel Arrington

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Wildlife in north carolina

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october 1964

Joel Arrington

Next Cast...

The crowds have gone from the beaches, the surf has begun to take on the chill of autumn and the channel bass and blues are hungry. The scene above is a Hatteras beach with an unsettled dawn breaking. October can be blustery or calm along the coast but the pleasant days outnumber the nasty ones. On the next cast...

Wildlife in north carolina

The official publication of the NORTH CAROLINA WILDLIFE RESOURCES COMMISSION, Raleigh. A monthly magazine devoted to the protection and restoration of our wildlife resources and to the improvement of hunting and fishing in North Carolina.

State of North Carolina

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Governor

North Carolina Wildlife Resources Commission

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COVER

Black bears have been characterized as the comics of the forests particularly with the advent of Smokey the Bear and Yogi. The contemplative fellow squating on this month's cover seems to bear this out. But don't let them fool you. A black bear can be a rough customer and is powerfully equipped to take care of himself. Rarely if ever will they attack man without provocation. Oil and colored ink painting by Tom Hale.

WILDLIFE IN NORTH CAROLINA recognizes the need for close cooperation between State and Federal conservation agencies and the people who hunt and fish—to bring about a restoration of our renewable resources. The Editor gratefully receives for publication news items, articles, and photographs dealing with the North Carolina out-of-doors, but reserves the right to reject materials submitted. Full credit is given for all materials published.

* * *

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Hunting Accidents, 1963-64

by John Parker

What will be the hunting accident tally this season? Well, here is what happened in North Carolina last year. It's not a pleasant story, but one that you need to hear . . . and heed.

Joel Arrington

What do you think when you slip a shell into your gun? Do you think safety? Reading this article won't make you a bit safer.

TRIPS afield resulted in death for 16 North Carolina hunters during the 1963-64 season. Some of them you may have known. Eleven of the fatal accidents involved young, comparatively inexperienced hunters who reportedly had little if any hunter safety training.

A total of 58 accidents was recorded by the Wildlife Resources Commission from September 7, 1963, through February 15, 1964. This figure surpasses by 11 the total number of accidents for any one season since 1960. A look back at the 1962-63 seasons for comparison reveals 46 accidents, 13 of which were fatal.

Age Group Involved

Last season's fatalities included a hunter seven years old and another age 74. This, then, was the age range for all accidents reported last year. Actually, 28 of the victims were 19 years of age or younger. Twenty-five of the shooters were under 19. Twenty-four of the 61 accidents were self-inflicted and again about half, 14, of these involved the younger hunter. The younger hunter discussed here was most often in the 13 through 18 age group. In other words, about half of those hurting or being hurt in hunting accidents were teenagers.

At the time of the accident, most of the injured were going to, involved in, or returning from a small game hunt.

And then there were three. A bright but slightly overcast day, a nip in the air, a hunting trip begins. Let's hope that all three men (and the dog) return. Hey, shut that gate!

Eighty percent of the time the weapon involved was the shotgun. One accident involved a large bore rifle, with the .22 caliber accounting for the remaining percentage. Seventy percent of the accidents were at very close range (0-10 yards).

The accidents were well distributed throughout the day but the majority of them occurred after the noon hour. General fatigue plus an anxious effort to bag at least some game, or on the other hand, to fill the limit may account for this increase during the second half of the hunting day. The two-hour period from 7 a.m. to 9 a.m. saw fewer accidents than any other two-hour period. Hardly a week went by in which one or two accidents were not added to the list. The last two weeks in November had the highest accident rate last season, but the increase was not drastic.

How Did They Happen

Circumstances surrounding the accidents were many and varied. Being mistaken for game or being covered by a shooter swinging on game were the two causes that most often showed up in the accident report. That all-too-familiar fence crossing business accounted for several accidents again last season. Many times the victim was as much at fault

Is this you? It takes but a second to unload the gun before crossing a fence. It may take an eternity if you don't.

as was the shooter. Suddenly stepping in front of a shooter's gun is an example of this. Other causes which frequented the list were: clubbing wounded game with the gun stock, ricochetting (in the case of rifles), gun falling from insecure rest, loaded guns and automobiles and accidental discharge.

What is the result of the wide range of accident types? Too many times the result is death. Most of the time, it is a serious injury or at least a painful one; amputation, loss of sight, the shooting away of large amounts of flesh, or the removal of dozens of shot from the posterior, are common results.

The tragedy of a boy killing his father, of a man killing his lifelong companion or the embarrassment of spraying with shot the landowner who waved you through the gate for a day's hunt, could all be prevented. The accidents of last season and the seasons past are the result of carelessness or simply the lack of gun handling know-how.

It is generally agreed that the 1963-1964 season was good and somewhat better than the previous one. As might be expected there were more hunters in the field but the increase was not unusual. License sales increase several percent each year at a fairly predictable rate. The thing that is not predictable is the hunting accident.

Dangerous Sport?

Last season's accident increase does not mean that hunting is dangerous nor that North Carolina is becoming a dangerous place in which to hunt. A leading insurance company reports that hunting is sixteenth on the list of so-called dangerous sports, and statistics show that North Carolina has fewer hunting accidents than most states of comparable hunter population. Actually the accident rate this year was approximately one per 7000 hunters or one per 100,000 trips afield. This is far less than the automobile accident rate for example.

Since it is known that hunting accident reporting has improved, it is possible that the hunter accident rate may actually be on the decline. It will take some time to determine if this is true.

It would be difficult to attribute the apparent accident increase directly to the normal annual increase in hunters. Often counties with the highest or average license sales have the lowest accident rate. There also appears to be little if any pattern to the accident location on a state-wide basis. One season the accidents will be grouped in seemingly well-defined areas of the state while the next season they will be more or less evenly distributed. Last season's accidents were grouped in the southeastern and western counties. With a few exceptions, the central part of the state was free of accident reports.

One naturally tries to apply rules and patterns to this type of thing, but as mentioned, a pattern will not hold up except in one way. According to the Wildlife Commission's records there is one block of counties that has not had a hunting accident since 1956. These counties, located in the Sandhills and central Piedmont are: Richmond, Scotland, Hoke, Moore, Lee, Chatham, and Orange. There are several other counties for which the Commission does not have a hunting accident recorded but these are scattered and do not form a block as do those listed.

There may have been one or more accidents in the

This looks ridiculous and it is. There's no telling what he is doing, but jumping a ditch or brush pile can be dangerous.

counties mentioned but from the standpoint of records thus far, they have a clean slate. It is quite probable that many accidents are never brought to the attention of officials, especially those accidents where very minor injuries occur.

Close Calls

The accidents that "almost happen" would also add up to a sizable figure. For example, if you closed the old side-by-side last year and it cut down a pine sapling, then you have certainly had an accident but no one was injured. Think of the times you were sprayed with shot last season. Perhaps this was only an annoyance to you but it could easily have been more serious. The point: practice hunting safety and insist that others in your party do the same.

Many will agree that there is no finer recreation than hunting. It entails many things. The fun in handling guns and other equipment, the joy of hunting with others and, to echo a well-used but appropriate phrase, it permits a certain closeness to nature not found in all outdoor activities. There are many ways to describe what hunting means to the tens of thousands of North Carolinians who make millions of trips afield each year. But tragic is the only way to describe the hunting accident.

Safety training does not have to end with the hunting season. It must not end if the actual hunting season is to be a safe and happy occasion. Every hunter or gun handler should brush up on safety practices often.

Even more important, if there is a young hunter in your home or neighborhood, take the time to pass along to him some of what experience and training has taught you about safe gun handling. Most accidents are caused by direct violation of the ten commandments of shooting safety, a copy of which can be obtained by writing to the North Carolina Wildlife Resources Commission, Box 2919, Raleigh. These rules can be kept. They do save lives, and they are not difficult to practice. This season will you and yours abide by them?

Most hunters like this couple, enjoy their sport safely and without trouble. Hunter safety is a matter of correct attitude rather than legislation. Learn how to be a safe hunter then do it. Make this season better than the last one.

Caswell Wildlife Management Area

by
Earl W. Sanders
Wildlife Refuge Manager

THE oft heard saying, "Water, water everywhere but not a drop to drink" might be rephrased by many a hunter these days to read, "Land, land everywhere but not a place to hunt." That's what Bill and Joe were thinking last November when they pulled to an abrupt stop along a road north of Graham after two hours of fruitless effort to find a place to hunt. Both men were new to the area, natives of Morganton. No relatives and no landowner friends. Bill spoke first:

"Joe, I though it was bad around Morganton but it's worse here. I've never seen so many no trespassing signs anywhere. We might have got some hunting on that farm with the Hunting By Permission Only signs, but the owner wasn't home. I felt like going in, anyway, but . . ."

Joe broke in, "I can't enjoy hunting on land that is closed. I like to be legal when I hunt."

Heavy clouds blotted out the sun just as a man driving a tractor pulled into a posted field across the road. Almost in unison both men asked,

"Friend, do you know where a couple of discouraged hunters can find a place to hunt?" To their surprise, the farmer answered, "Indeed I do. Go north on this road to the vicinity of Yanceyville and you'll find a real good place to hunt. It's state owned. Folks call it the Caswell Wildlife Management Area. You'll find the boundary lines marked with orange paint. I've had some good hunting there. But watch out for the turkey refuge. They guard that close."

Needless to say, Bill and Joe lost little time finding the area. They hunted with abandon until sundown. Neither bagged the limit of game; Joe shot two quail and a rabbit while Bill managed to get one quail and one rabbit. The amount of game bagged, however, wasn't important. They had done better on many occasions. The item of importance was that they had finally found a place where they could hunt. It was their land—land paid for by license fees. No longer would they have to worry about finding a place to hunt.

Hundreds of other hunters have found the Caswell area a good place to hunt. Many of them know the area well. However, many people have never heard of it and it is for these people that this story is being told.

THE Caswell Wildlife Management Area and the twelve compartments that comprise its 14,000 acres of land is located among the rolling hills of Caswell County not far from Yanceyville. Before the Wildlife Resources Commission bought the land in 1959, it was the property of the U. S. Forest Service. Numerous fields, many of them leased to farmers for agricultural purposes, provided good habitat for rabbits and quail, and the surrounding hardwood and pine forests contained squirrels, a fair population of wild turkeys and a few deer. Quite true, the soil in many areas was badly eroded and none too fertile. Game populations were not high. Development of the area, however, could be counted on to replenish their numbers. But the Commission saw more in the Caswell area than this.

It saw the cities of Greensboro, Bur-

State fox hunters hold their annual meeting here this month. Buildings and grounds serve many other groups too.

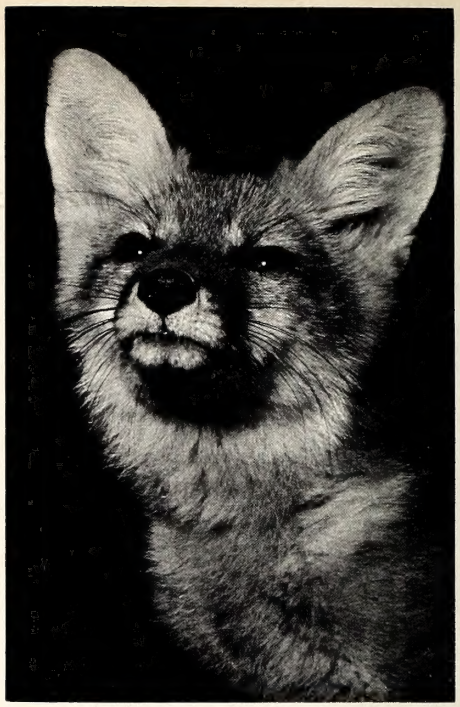
lington, Graham, High Point, Reidsville and many other densely populated areas not far from the management unit—a 60-mile radius area containing tens of thousands of hunters. Some of these hunters with the financial means can afford to go to coastal and mountain counties for their hunting and others can go on land owned by relatives and friends. But thousands of hunters like Bill and Joe have no sure place where they can legally hunt. It was these people the Commission had in mind when it decided to buy the Caswell Wildlife Management Area.

That is why the area is one of the few places of state-owned land in North Carolina where a licensed hunter can hunt to his heart's content with no questions asked.

While concerned with bettering the small game hunter's lot, the Commission did not overlook the slogan that it has strived to carry out for more than 18 years: "More sport for more people, equal opportunity for all." And with that in mind a fox field trial building was constructed with facilities for hunters to run foxes with dogs during most months of the year. Some small game hunters resent this arrangement. They say that the foxes eat up all the rabbits and quail and eliminate the wild turkeys. Foxes do eat some game animals. But they also consume mice, rates, insects, apples, persimmons, small birds and a long list of other foods. I am pleased to say that game management efforts on the Caswell area have proved to me that an abundant population of small game can be maintined on habitat supporting a good supply of foxes.

It is hoped that a 3500-acre turkey refuge established on the management area in 1961 will insure the presence of wild turkeys in Caswell County for many years to come. Food patch plantings, establishment of clearings and other management practices have resulted in moderate turkey population increases in the refuge. However, elsewhere on the area and in the county, turkey populations have decreased in recent years and there is evidence that much of this decline has been caused by the widespread use of insecticides (endrin, dieldrin, etc.) sprayed on tobacco. This spraying—often by airplane— is done in summer months at a time when the hen turkey and her poults forage for worms and other insects in tobacco fields. The large, three to four inch-long worms are especially liked. It is believed that these insecticide-killed worms are eaten and the turkey dies. On one occasion I found a dead turkey near a tobacco field that had been recently sprayed with endrin.

The Commission's turkey specialist, Mr. Sam Gooden, plans to make a study of the situation and efforts are already underway to ban the use of insecticides on the 108 acres of tobacco grown by farmers on the management area.



Jack Dermid

Indications are that on this area, a high small-game population can be maintained even with a good supply of foxes present.

Large acreages of oak-hickory timber provide excellent habitat for squirrels and turkey and ideal places for hunters to hunt. Extensive bottomlands support numerous den trees and a good population of raccoons. But perhaps as important as any cover type for game—principally quail, turkey and rabbits—is the approximately 900 acres of fields. Many of these fields contain valuable food and cover, 86 food patches of annual food mixture totaling 40 acres were planted last spring—especially for quail. Ten farmers on the area who annually rent about 110 acres for corn, milo, grains and other crops were asked for the first time this year to leave one-fifth of their crop for quail and other game. Their response has been excellent. In fact, some farmers liked the idea so much that they have planted 11 acres of annual food mixture. This acreage and 17 acres of lespedeza and clover planted along a 50-foot wide right-of-way leased by the Plantation Pipe Line Company last spring will provide additional food and cover for game animals this fall and winter and better hunting for the hunter.

It should also be mentioned that while the production of game for hunting is a

Joel Arrington

This strip of wheat was left for quail, doves, and turkeys by one of the cooperating farmers. The author checks the crop.

prime objective, another important objective is the management of the area for forest products. Game food producing hardwoods like oak, hickory, dogwood and persimmon are not cut. However, pine is cut in quantity and 15 percent of the money received goes to the county. Commission foresters are handling this part of the management program and they are doing a commendable job.

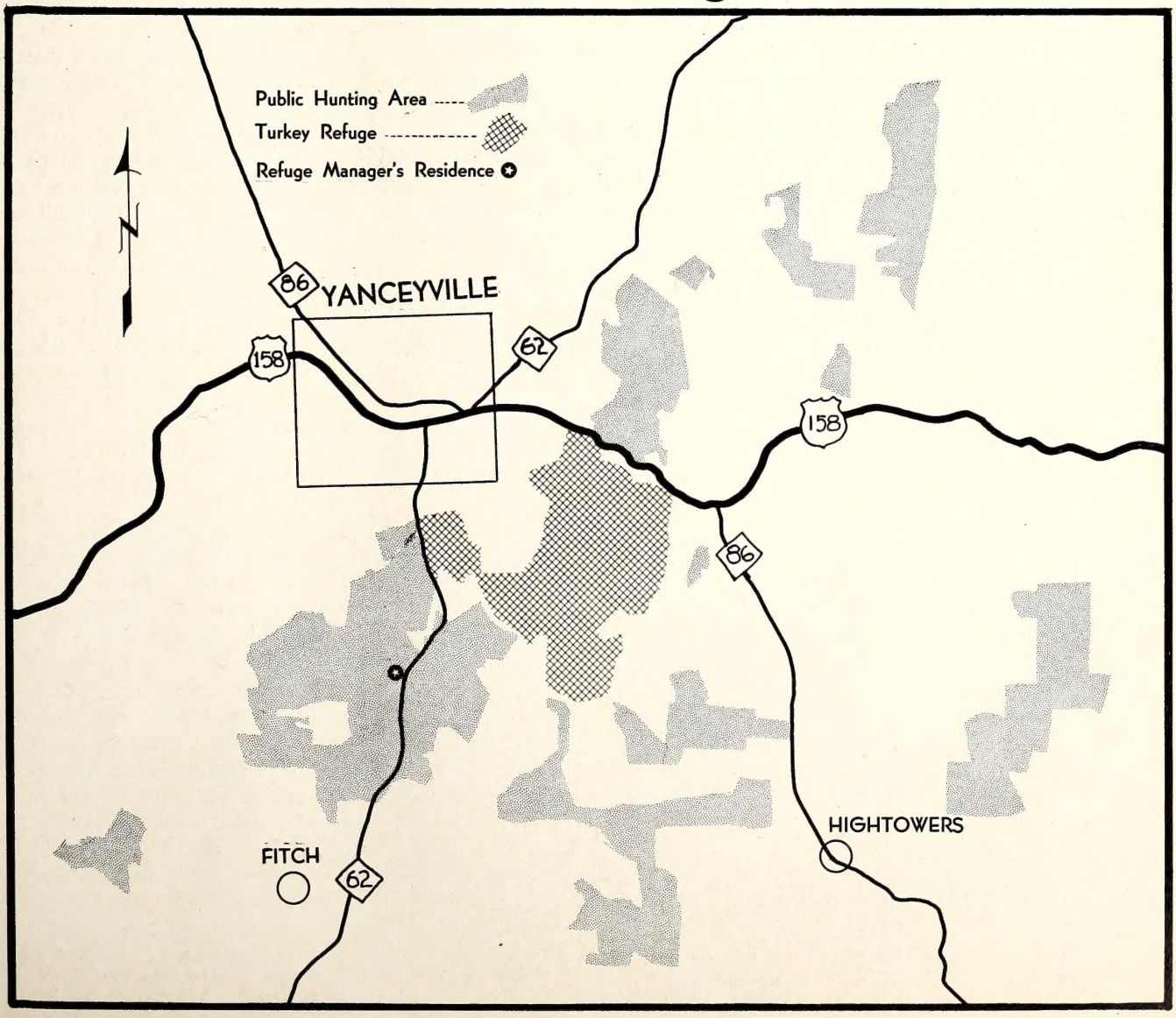
Boy Scouts and 4-H Club boys and girls use the fox-dog field trial buildings for group meetings and outings. In May of this year more than 1000 Boy Scouts enjoyed a weekend camp-out on the area.

This year with Mother Nature's help and a good crop of game we hope to provide Tarheel hunters with many hours of wholesome, enjoyable recreation. Come and hunt on land that your license dollars bought. There is no charge for hunting and all safe hunters are welcome.

Joel Arrington

More than 80 strategically-located annual food patches like this one, will provide additional food for quail, turkey and other game during the 1964-65 hunting season. The map below shows general hunting and turkey refuge areas.

Caswell Wildlife Management Area



NORTH CAROLINA WILDLIFE

RESOURCE-O-GRAM

A ROUNDUP OF THE LATEST WILDLIFE NEWS

Major Hunting Under Way in October

During October the hunting seasons on all major game species except rabbits, quail and wild turkeys and waterfowl will be opened. Check your regulations for opening dates, bag limits and other information. Copies of state regulations will be issued with your hunting license. Federal regulations are available from the Wildlife Resources Commission, or, in the case of waterfowl regulations, from your post office.

Waterfowl Seasons Announced

The Wildlife Resources Commission has selected these dates and bag limits for waterfowl hunting from a framework offered by the U. S. Fish and Wildlife Service: Geese, November 7 - January 15, bag 3 and 6; note goose hunting will not be done in Currituck Sound until opening of duck season.

Ducks, brant, coot, mergansers, November 14 - January 2; duck bag 3 and 6, coot 10 and 20, mergansers 5 and 10. Brant season is concurrent with the goose season, bag 6 and 6; daily bag for ducks may include not more than two wood ducks or two mallards or two redheads or two canvasbacks or one of each. Hooded mergansers do not count for ducks this year, and there will be no "bonus" on scaup.

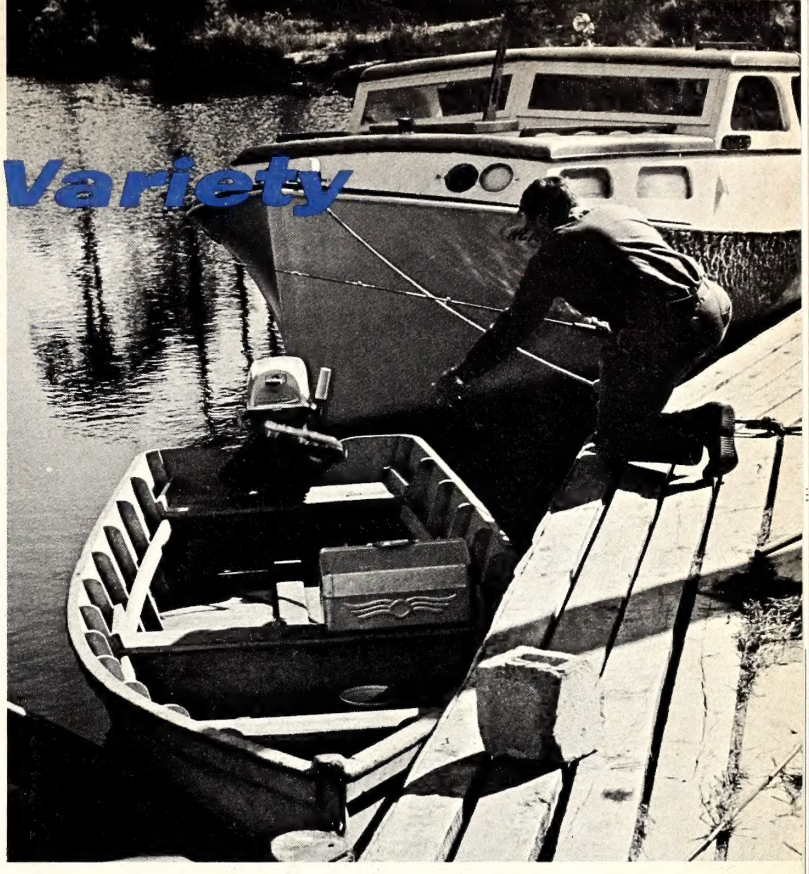
Fish Regulation Hearings Set

Three public hearings are scheduled for October to give Tarheel fresh water anglers a chance to express their views on setting the 1965 fishing regulations and other matters pertaining to fresh water fishing. Dates for the hearings are: Asheville October 19, Salisbury October 20, Washington October 22. All meetings are set for 7:30 p.m. in the courthouse of the cities involved.

Trout Coordination Meeting Scheduled

Asheville will be the scene of a mid-October meeting between officials of the U. S. Fish and Wildlife Service and the Wildlife Resources Commission to make long-range plans for trout production for North Carolina's mountain trout streams. Trout production is expected to be maintained at above the 600,000 keeping-size level with the two agencies sharing equally in the production of trout for stocking. In 1950 fewer than 100,000 trout were stocked; this year 684,650 were put in Tarheel trout waters.

Sounds for Variety



Before the trout hit their peak in the sounds, the stringer often can be filled with a variety of other customers . . .

By Duane Raver

Photos by Joel Arrington

THERE'S no telling just how many square miles of saltwater sounds slosh along the North Carolina coastal area. Some are saltier than others, perhaps a fathom or two deeper and a couple of miles wider, but all furnish the small boat angler with plenty of fishing opportunities. Fall is a most pleasant and quite a productive time to hit the sounds.

A seaworthy 16- or 18-foot outboard skiff with at least an 18-horsepower motor does well if you keep an eye on the weather. Go prepared for choppy water and have plenty of gasoline aboard plus all the required safety equipment. A good chart of the waters to be fished will help get you back to home port.

Tackle is up to you, and the type depends on what fish you're after. You'll be pleasantly surprised at what you can do with medium weight freshwater gear if you'll take a few precautions about caring for it after its saltwater bath. Spinning tackle with 10-pound test line will handle most of the sound fish unless you latch on to a cobia, a big drum or something else in the heavy weight class.

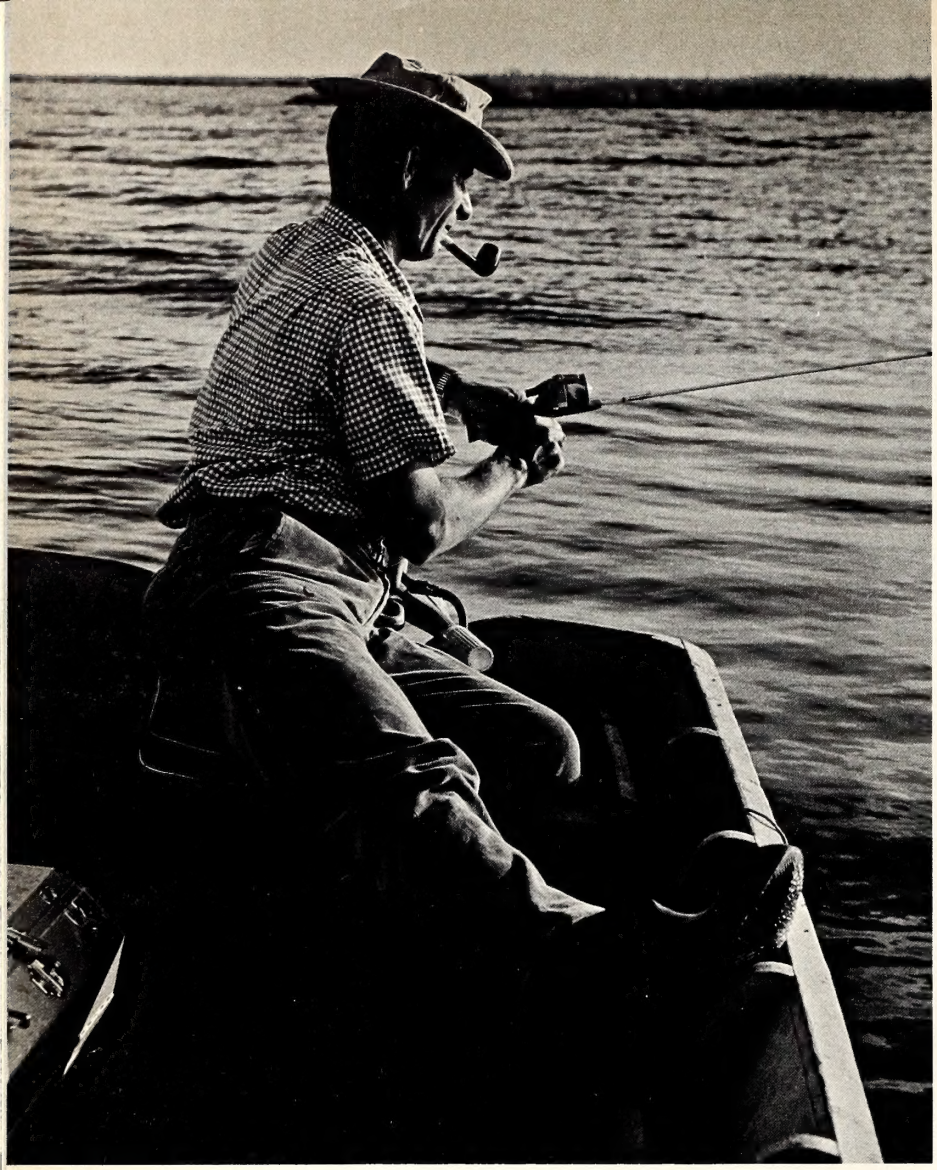
Conventional gear with a shorter rod and casting reel of some variety will serve well too. If you're determined to tangle with the big ones, a substantial trolling stick with a star drag reel loaded with 25-pound test line may be in order.

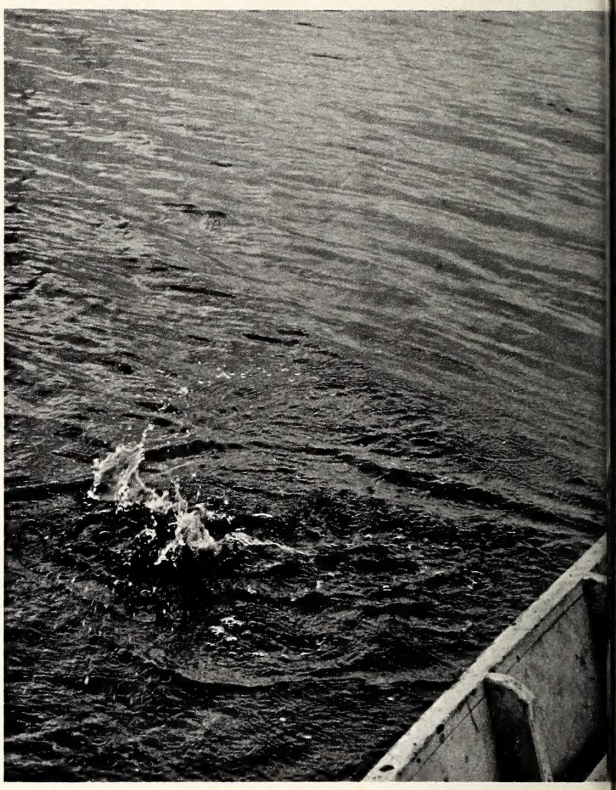
On the trip pictured here, plenty of sport was furnished by fish of less than two pounds. The bait was mostly shrimp fished fairly close to the bottom. When surface activity was spotted, bright spoons went to work in case a hungry bluefish was interested. Other artificials that picked up fish included small jigs of various colors.

It's no trick to find fishing water, but it is best to check with local fishermen about special spots that seem to concentrate the sound scrappers. A bit of exploring, including testing the depth of water, may be in order early in the fishing trip. You might discover a new hot spot of your own.

A gentle breeze ruffles the surface of Spencer's Creek as it opens out on Croatan Sound near Manns Harbor. The deep holes near the marsh vegetation often attract many sound fishes. From late September on into pretty chilly weather, fish of a dozen varieties cruise the clear, brackish waters. Our anglers here have things pretty much to themselves, at least for now.

Soun





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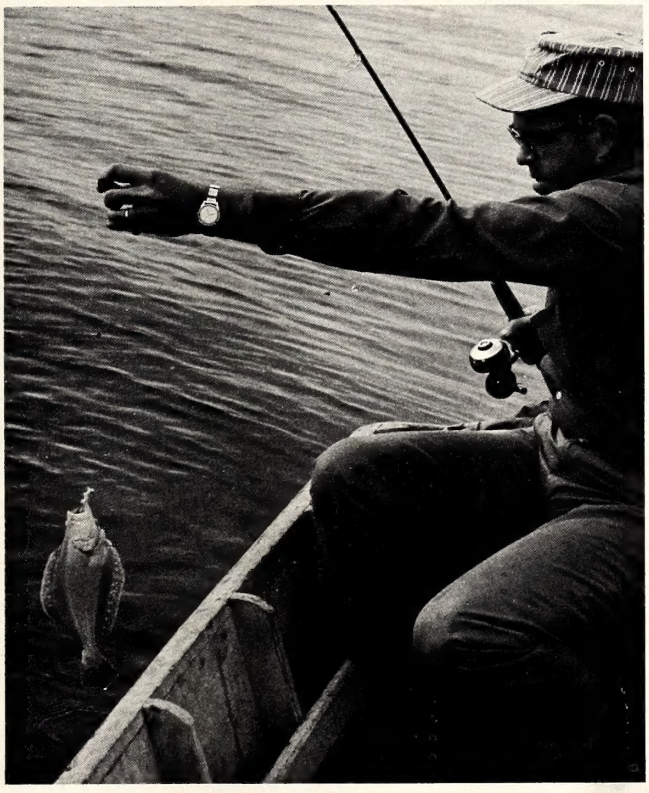

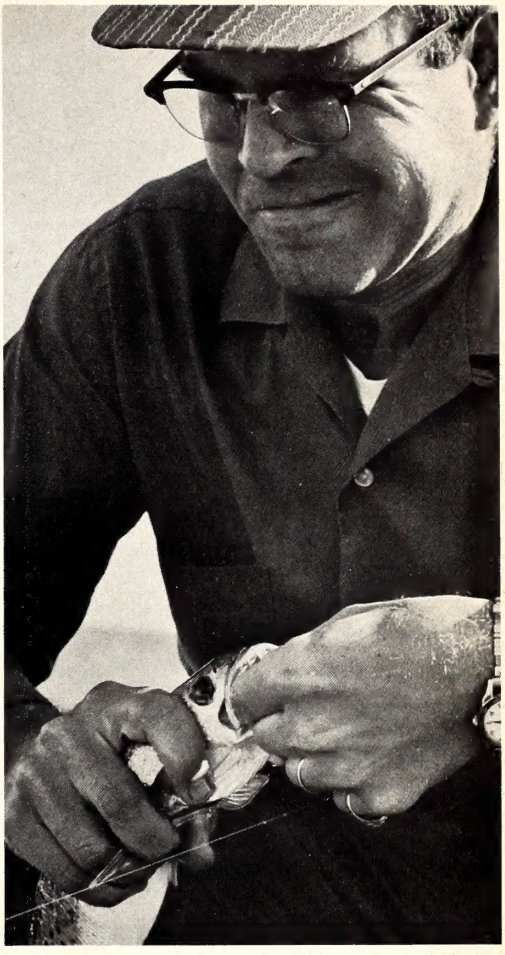

Sometimes removing the hook from the tooth-lined jaws of a trout is more difficult than bringing it aboard in the first place. But all's well that ends well, and it is about time to head in after a pleasant day of sound fishing.

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no exception.
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n a flight of
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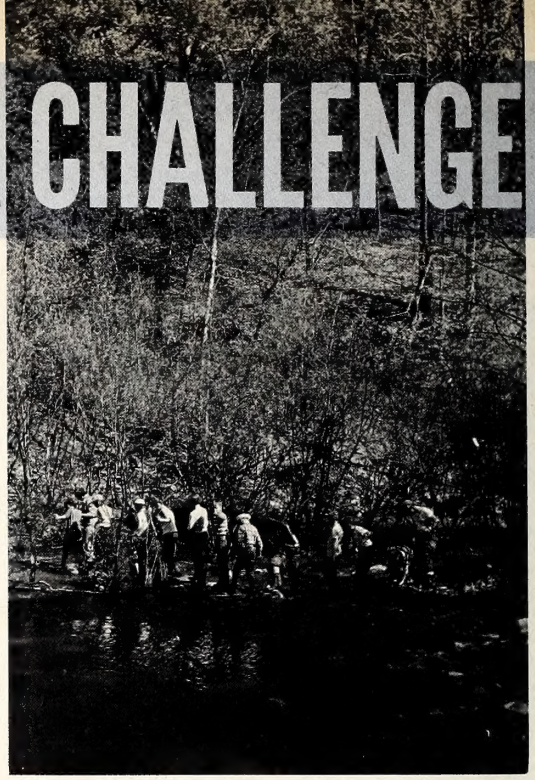
snap you out

of your daydreaming and the result may be a fat speckled trout (top one, below), or a scrapping gray trout (bottom fish, below). But this is only the beginning. Before the day is over, you could rack up almost a dozen different species. The speckled trout at left is followed by a croaker and a white perch. Light tackle is the secret to plenty of sport from these glistening fighters.

SCHOOL CAMPING-A CHALLENGE



Jack Dermid

By Janis Snow

THE merit of school camping has long been recognized as a valuable means of providing direct learning experiences for children since such experiences bring about the most effective and permanent learning. For many children, camp gives a great deal of physical, spiritual and mental stability.

Thus when thirty-one fifth graders from Wentworth School, in Rockingham County, set out for a week of overnight camping at Camp Cherokee, near Wentworth, on April 27, 1964, the ten years' dream of school camping materialized for Miss Sue White, Supervisor of the Rockingham County Schools. Those thirty-one fifth graders became the first class in a county school system to experiment with school camping geared to science and nature study.

The basis for choosing that particular fifth grade was that the classroom teacher had had some camping experience with groups of children.

The main responsibility of the classroom teacher in the camp program was that of the pre-planning and the follow-up of camp week. Outside instructors who were experts in their field came to do the actual teaching. They were: Miss Lunette Barber, with the Wildlife Commission, who taught Wildlife; Mr. Dale Keller, Visual Aids Consultant, who gave a week of his time and "know-how" in initiating the fifth graders to camp life and the Nature Trail; Mrs. Margaret Wall, Principal of Cone School in Greensboro lent her expert knowledge of Rocks and Minerals; Miss Etta Schiffman, retired fourth grade teacher and outstanding member of the Audubon Bird Club, taught Birds; Mr. Bill Hamnett of the State Museum, Raleigh, instructed for Water Biology; Mr. Fred Whitfield, Forest Management Extension Specialist taught Forestry; and Mr. Grady Wise, Rockingham County Soil Conservationist, demonstrated Soil Conservation. Mr. Allan Lewis, Superintendent of Rockingham County Schools, so deeply believed in the camping experience for boys and girls that he devoted the entire week to living among and working with the ten-year-old campers.

School campers at Camp Cherokee construct a check dam in a wooded ravine. They will gain respect for natural resources.

In order to participate in the above-mentioned studies, the thirty-one fifth graders were divided into groups—one with fifteen and one with sixteen pupils. Intensive study, demonstration, discovery, and experiment characterized the two-hour period which was allotted for each of the topics. A half hour for summarizing and evaluation followed each period.

Other phases of camp life plus the above topics contributed to a well-rounded camp day which started at seven o'clock in the morning and ended at nine o'clock at night.

There were cooperative chores such as washing dishes, sweeping floors, making beds, setting tables, and cleaning the camp which served as a springboard for practicing democratic living.

Physical education was planned to incorporate a variety of physical activities toward the end of the afternoon.

Free time and rest periods came after the noon and evening meals.

Meal time was a joyous occasion! As each meal approached and after a moment of blessing, the energetic campers filed into the large dining hall to be seated eight to a table. Table assignments had already been cooperatively decided upon. Famished appetites were replenished from the bountiful meals which the campers themselves had planned (as an outgrowth of a health activity in the classroom prior to camp).

The evening program consisted of an hour of folk dancing, square dancing, and storytelling. Mr. Lewis, the Superintendent, was the favorite "tale teller" and kept the group in moments of suspense with his tall tales.

"Show and Tell" was the culminating activity reserved for the last afternoon at camp. All during the week each camper pursued some particular interest in depth whenever there was a free moment to search out and pore through the bountiful supply of source materials on science and nature which had been assembled for camp week. Thus "Show and Tell" was really an oral resume of an individual's re-

It's not too early right now to start thinking about school camping for your school. It provides an opportunity for a close examination of the world of Nature as this girl is doing, or a restful siesta in outdoor surroundings as our friend below is doing. School camping combines experiences in many areas of learning and the end result is a better equipped leader for tomorrow's world.

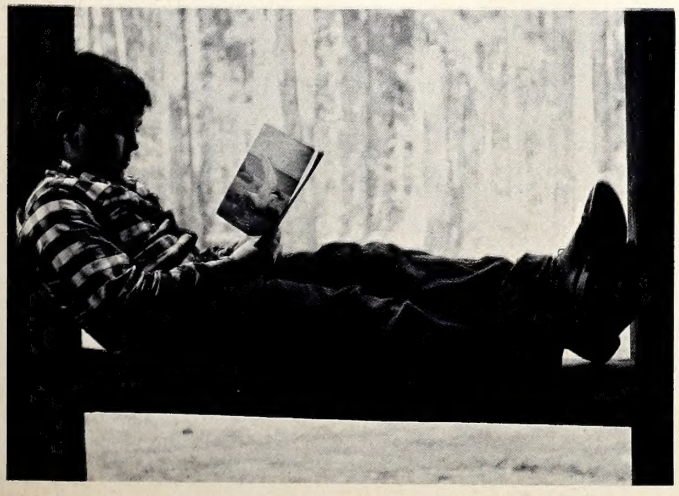
Jack Dermid

search which he shared with other campers as they sat in a semi-circle by the huge rock fireplace.

In asking the campers what they enjoyed most about their week at Camp Cherokee, one little boy said, "The part I liked best was Wildlife in the woods with Miss Barber!" Another said, "I liked Forestry because I want to be a Forester when I grow up." Still another said, "I liked the Nature Trail because Mr. Keller showed us so many interesting things we didn't know." One other child, the smallest of the group said, "I've had the best time I've ever had; I wish we didn't have to go." One quite energetic boy whose appreciation of the food was quite obvious at every meal said, "That was the best food I've ever eaten!" Insistently several times a little girl camper said, "I just didn't believe camp could be so much fun and a lot of learning too!"

Thus the interesting, intriguing, and energetic week of school camping at Cherokee come to an end on Friday, May 1, 1964.

Everything sounds so enchanting but the successful week of camping did not come about without work and a whole lot of cooperative planning by Miss White; Mr. Lewis; Mr. A. W. Hunter, Principal of Wentworth High School, who was willing for his school to attempt such a camping program; and the classroom teacher, Mrs. Janis Snow.



Much planning had to be done in the classroom directly with the children. Quite a bit of the planning started weeks before the actual camp date. There was preparation of individual camp booklets which included the following information cooperatively decided upon: Camp rules, mess hall manners, trail agreements, cabin conduct, trail mates, table assignments, table hosts and hostesses, daily schedule copied, camp trail schedule, duties and assignments. (In completing this activity, all realms of the language arts were practiced).

Letters had to be sent to parents to explain the program, permission had to be secured for the campers to go. Parents who volunteered to do the cooking of the three daily meals had to be worked with.

Visits by Miss Barber and Mr. Keller to help ready the group for Wildlife and the Nature Trail were part of the planning. The earning of the small fee for camp meals was urged.

Since school camping was a new area for elementary school curriculum, some public relations work had to be done. Buying of the food and getting supplies and materials to camp had to be reckoned with.

Follow-up work back in the classroom consisted of writing letters to instructors, volunteer parents, and others who helped with various aspects of camp. Thus every child had a very real purpose for participating in the skill and art of letter writing. Some of the pupils served as Nature Trail guides to other groups and classes. They showed and explained various plant and rock specimens along the trail. Still other children shared their camp experience with other classes by giving talks. There was much carry-over of interest in nature study that the class tried to continue until the end of school.

In conclusion, one can say that the Wentworth fifth grade pupils had a profitable, worthwhile week of discovery, adventure, and direct learning experience that they will never, never forget. Such a camp program surely offers another frontier for elementary curriculum improvement!

The Turkey Vulture

By Joel Arrington

THE sight of a turkey vulture or "buzzard", as it is often called, soaring high overhead, just a speck in the sky, inspires admiration for its aerial grace and wonder at its ability to find food from such a height. The impression received from the bird at that distance is altogether different from that formed from a closer association. There is hardly a creature in the animal kingdom which is more revolting in appearance and habits. Yet there is hardly an animal more cleverly adapted to its particular mode of life.

The turkey vulture, **Carthartes aura septentrionalis,** is placed improbably, in the order **Falconiformes** along with the hawks, eagles, and osprey. This is the order of the birds of prey. While most of the other birds in its order catch their prey alive, the vultures wait patiently until the hapless creature is dead before it begins the feast. There is some controversy as to whether the vulture locates its food by sight or by smell. It is likely that both senses are highly developed.

Vultures can be distinguished in flight from hawks and other soaring birds by the angle at which the wings are held. Vultures hold the wing tips slightly higher than the body, forming a shallow "V", while hawks hold their wings straight out from the body. Usually, hawks will flap their wings more often than vultures, the former being less adept at soaring for long periods.

The black vulture is a close relative of the turkey vulture. A slight backward bend at the carpal joint of the turkey vulture's wing distinguishes him in flight from his slightly smaller cousin. Both birds are found year-round in North Carolina, but the black vulture is rarely seen in the mountains, while the turkey vulture is evenly distributed statewide.

Most people's experience with the turkey vulture comes entirely from watching these large black birds from a moving automobile as they fly from a roadside corpse where they have been feeding. They have, in their attempts to become air-borne, sometimes collided with the windshield of an auto. When a vulture is approached by a man or a natural enemy, it has the nauseating habit of disgorging the putrid contents of its crop or stomach, a highly effective defense reaction.

This bird, so graceful and effortless in its flight, is pitifully ungainly and awkward on the ground. It walks only with difficulty, often hopping and occasionally giving a comical hitch sideways. Its appearance only adds to its bad reputation. The raw-red head and neck are naked except for a sparse hair-like growth. There are white warty growths around the eyes. The hooked beak is powerful and wonderfully adapted for deftly picking an eyeball from its fallen prey and later peeling back the skin to expose the soft muscles.

As the chief avian scavengers of the United States, these curious birds occupy an important niche in the natural community which few would envy. The turkey vulture, with the help of its cousin, the black vulture, serves the useful purpose of ridding the countryside of the dead. Although virtually the entire diet of the bird is composed of carrion, it has been reported that they will sometimes eat live young pigs and heron and egret nestlings when they can be found.

Vultures are highly migratory, often gathering in flocks for their lengthy flights. They nest in a variety of places, all of them chosen for their inaccessibility. Nesting sites have been found in caves, on cliffs, hollow logs, and in shrubbery. There is little effort to make a nest. The eggs are commonly laid on the bare ground or in the soft rot of a decomposing log. There are almost invariably two eggs, although one to three have been found. The eggs hatch in about thirty days, and the young are fed on carrion regurgitated from the crop of the parent, accounting for the offensive odor always associated with a nesting site.

It was once feared that the turkey vulture was a carrier of hog cholera, but that has since been disproved. Unfortunately, these useful birds are indiscriminately shot—to the detriment of a balanced natural community. In North Carolina, vultures are not protected; however, to many, the wanton slaughter of these birds is childish and wasteful of a useful and highly interesting species.

"The better to eat you with", perhaps says this unlovely creature. And well-equipped he is to tear flesh with the hooked beak after locating the dead animal either with the flared nostrils or large eyes. The turkey vulture, as homely as he might be, has a place in Nature that few can fill. He helps clear our fields and highways of the dead animals, from foxes to snakes. He certainly intends harm to no one and should not be destroyed watonly.

Game: It Can Be Good!

by
Richard H. Eggleston
Wildlife Biologist

If you say, "now what?" when confronted with a batch of game to cook, read this.

PROBABLY none of us can remember when the daily meat diet consisted of wild game. In days long past, the meat of the day was provided by hunting. The husband provided; the wife cooked. This was an accepted way of life.

In those days, if the hunter failed to bring home the bacon there was nothing to take its place. Today the super market is handy. But even today with super markets, there is a large amount of game killed. However, much of this meat is never put on the table and enjoyed as it was in the past.

Too often the meat has a strong odor, and with the first bite, a strong taste. This is the result of improper handling of killed game, and the misuse of modern-day cooking. Along with these factors, many recipes call for ingredients not ordinarily found on the kitchen shelves, and the everyday cook has become skeptical of all game cooking. This should not be.

Game is undoubtedly a higher priced meat to put on the table than our usual fare, and since it is a bit expensive, every effort should be made to get the full benefit from it. The combination of dressing, chilling and cooking makes the difference. Without all three, the hunter's success turns into a culinary failure.

Upon killing, all meats cool to air temperature. The higher the air temperature, the quicker the meat spoils. The warmer the temperature, the faster the game should be cleaned and chilled. It may be chilled either by ice or cold storage. A "shot up" deer or rabbit takes on an off taste when not dressed promptly. Dove and quail can be drawn and dropped into an inexpensive plastic ice bucket that has been partially filled with ice. By this method, the dressing process can be completed 10 to 12 hours later. Grouse can be drawn and rinsed in a clear mountain stream. The main point is to prevent the reheating of **any** meat. Many a deer transported home over an automobile hood has caused the wife to say, "It smells."

These simple procedures will assure the hunter and his family true enjoyment of his day's hunt:

1. Draw and chill game as soon as possible.
2. Age large animals in chill rooms for at least five days before butchering. Remove fat or tallow from deer.
3. To insure tenderness, older game can be pressure cooked before preparing by favorite method.
4. Most game will retain its flavor longer if frozen in water. Plastic or paper milk cartons are suitable for this.

The following are a few suggested recipes for our most-hunted game.

Charcoaled Doves

(Grady L. Barnes, Supervisor Eastern Wildlife Management Area, New Bern)

What will be the destiny of this limit of doves? Good eating actually depends on how they are cared for from the time they hit the ground until placed on the plate.
Jack Dermid

Clean breast of doves, add salt and black pepper, and put on the charcoal grill. Be careful not to overcook.

Smothered Doves

(Mrs. Richard Eggleston, Burlington)

For 6 to 8 doves: Pluck dove (do not skin). Brown in butter or drippings in pressure cooker. Salt and pepper to taste. When birds are evenly browned, add a stalk of celery cut into thirds, a diced onion, and a diced green pepper. To a cup of water, add 2 tablespoons of Worcestershire sauce, and pour into pressure cooker. Put on the lid, and pressure cook for 20 minutes. Return pressure to normal, and the doves are ready. If you like gravy with your birds instead of broth, roll the birds in flour before browning.

Quail

(Mr. E. N. Pearce, Burlington)

Sprinkle with flour and fry in shortening until brown. Make gravy, add browned birds, cover pan, and let simmer for about 1½ hours, adding water as needed.

Fried Squirrel

(May be used for rabbit also)
(Burgess and Waddell, Alamance Wildlife Club)

Separate young and old squirrels. Cut into pieces. Par-boil with salt and pepper in open pan until tender (older animals taking longer). Roll in plain flour, fry in hot fat until golden brown. Drain and make gravy.

Squirrel Pie

(serves 4)
(Tom Rollins, Wildlife Protection Supervisor, Sanford)

Cut 2 squirrels into 5 pieces each—quarters and backs. If old and tough, par-boil for 20 minutes. If young, par-boiling can be omitted. Brown the pieces in hot fat, preferably bacon or salt pork, and place in a baking dish lined with dough made from ready-mixed biscuit flour. Slice and add 2 carrots, 2 onions, 2 potatoes, and 1 green pepper.

Brown ¼ cup of flour in the fat left in the skillet, add enough water to make a gravy, and pour over meat and vegetables. Season with salt and pepper, 3 tablespoons of lemon juice or vinegar, and 2 tablespoons of butter. Cover with a top crust, and bake 1½ hours, 350°.

Smothered Deer Steak or Chops

(4 to 5 servings)
(Mrs. Richard H. Eggleston, Burlington)

Pound 1½ pounds of steak or chops, roll in flour, and brown in drippings; salt and pepper to taste. When brown, remove from pan, and make gravy. For liquid in gravy, use onion soup that has been made with ½ package of prepared onion soup mix poured into 2 cups of boiling water. Put meat into gravy, cover, simmer for 1½ hours, or until tender.

Wild Duck and Geese

(Carolyn White and Kitty Reed, Perquimans County)

Season the inside cavity of the dressed duck or goose with salt and pepper. Fill the cavity with a mixture of raw chopped celery, onions, apples, and white potatoes, seasoned with salt and pepper. (These help absorb some of the wild game flavor.)

Rub the outside surface of the bird with a cut onion and bacon fat. Place on a rack with breast down in a roaster with a close-fitting lid. Pour one cup of water in the roaster, cover and cook in a slow oven (300°) about one hour. After the first hour, turn the bird with breast up and cook until tender.

Remove the cooked vegetables from the cavity when the duck or goose is done. Stuff the bird with one of the following: a highly seasoned bread dressing, cooked wild rice, or sauer kraut. Place in a shallow pan and return to the oven (350°) to brown.

We are looking for more family-favorite game recipes. If you have one, please send it to us.

Happy eating!

Joel Arrington

There is really no way of telling, but the chances are better than even that a good bit of wild game goes to waste after it has been killed because of improper preparation. There is no such thing as a "wild taste"; it is a "game taste", and if you don't like it, you may be cooking the critter wrong. You should have definite plans for the quail even before the dog points, and certainly as the retriever sloshes to the blind you're already planning a duck diner.

Jack Dermid

The Skipper

Conducted by John Parker

IF I were to tell you that there are ten ways to remove the water from a boat you might reply, so what, or no there are eleven. Actually I am not sure just how many ways there are to remove water from a boat. Depending on how one chooses to categorize and count the various methods, there may be more than a dozen or half that many.

Obviously, it is important to know how to remove water from a boat. In an emergency most of us would take a firm grip on anything that would hold water and start bailing, and I might add that we would no doubt do a good job of it. I would not like to venture a guess at the number of gallons that are removed in that manner during a summer's boating.

Actually it was the July rains of this past summer that started me to thinking about the various ways to go about this ageless task. Unless you are fortunate enough to have a shelter or a well-fitted canvas cover for your boat, then this common boater's chore may have increased during that period.

Water seems to find its way in whether the boats are large or small, on a trailer or at dock side. It is best to keep the interior of your boat dry as much as possible and a cover is certainly an advisable boating accessory. It is especially important to prevent any amount of water from building up in a boat when she is underway. Only a few gallons of water can affect the handling of a small boat and this type of instability is amplified in rough water. And as mentioned before, a dry boat makes everyone feel just a little more secure.

The bilge of a boat is defined as the internal part of a boat below the waterline. Keeping that definition in mind, we can readily see that even the smallest of boats can have a bilge. The bilge or bottom, if you prefer, is the place where the water that we have been discussing collects. The pump used to remove this water is, logically, a bilge pump.

Starting at what might be termed the top of the list we find the electric bilge pump. There are several makes on the market, and of course, they vary in size and price. The submersible pump is a very popular type for outboard use. One make starts at about $20. An outboard electrical system furnishes sufficient power for the small electric motor. Pump and motor are in one compact package making installation a matter of placing the pump in an out-of-the-way position in the bilge and connecting outlet tubing and electrical leads.

If you desire an automatic electrical pump you will have to shell out about twice the above amount for the cheaper models. The automatic pump is usually activated by a float device.

Other electrical pumps are dry-mounted with only the intake hose going into the bilge. They, too, are compact, need no priming, are automatic or manual, will work off outboard electrical systems; and installation costs should not run over $75 for the better ones. It would probably be hard to find a popular make of pump not "spark proof," but this is an important safety feature to watch for.

Probably the next best pump, insofar as what is physically required of the boater, is the "automatic bailer" that is standard equipment on certain makes of outboard motors. The only additional equipment in your boat is a section of rubber hose fitted with a screened suction head.

Comparable to the above is a device which fits on to the lower cavitation plate of your motor and derives its "pumping power" via venturi action. One brand, the K-B Boat Bailer, sells for $7 and installation is simple. Capacity of this device is about 4 gallons per minute which should be more than enough for the average outboard bilge problem. A suction hose is the only additional equipment in the boat.

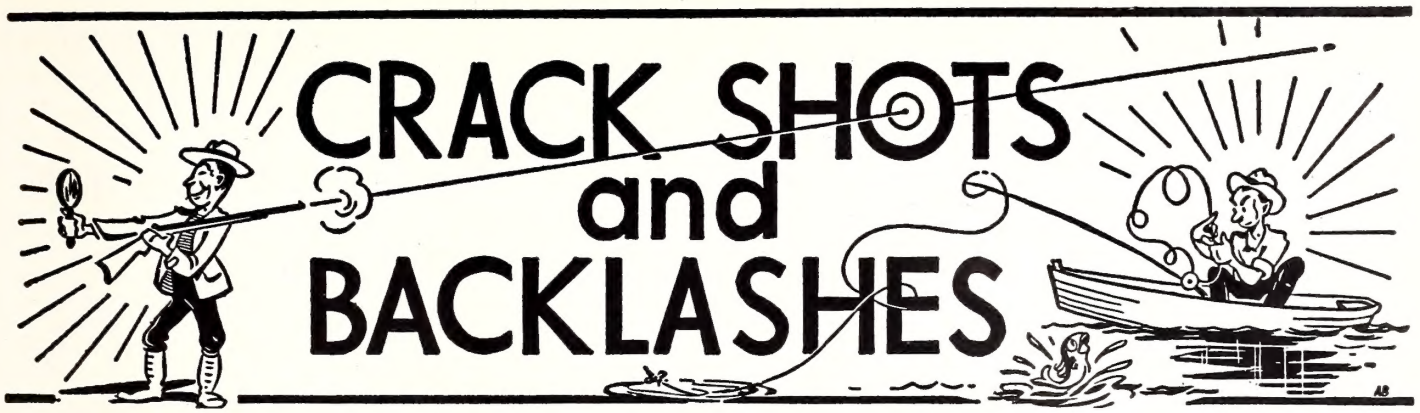
The hand bilge pump is probably most commonly used by the outboarder other than bailing which we are working towards. The hand pump usually derives its suction power from a piston in a cylinder. Water is pulled in through the bottom of the cylinder and discharged at the top through an attached hose leading over the side of the boat. Prices on this type of pump range from about $5 to over $25, depending on whether they are made of plastic or metal and depending on the capacity and amount of hose included. However, before one spends $25 on a manual pump, it would seem reasonable to buy the less expensive electric type. The hand pumps have a capacity of about 3 to 6 gallons a minute depending on how much muscle you apply. In other words they will deliver about one gallon per four strokes, depending on the pump.

Drain plugs can be used when your boat is underway or when it is on a trailer. A drain plug is installed in the transom or the bottom and I have seen a few boats, fiberglass as I recall, with the drain built into the side of the boat. The simplest drain, other than a cork stopper in a hole, is the transom drain. A metal sleeve which goes through the transom and a rubber stopper with an expansion lever are the basic components. The price is about $2. The bottom-mounted drain device costs about $5. There is a little more to this one, as part of it, the discharge part, is mounted on the outside of the bottom while the opening device is mounted on the interior or floor of the boat. The two parts are, of course, bolted together over a properly sized hole in the bottom. Other drains incorporate check values, etc., and may cost well over $5. A word of caution—be sure that all drains are closed prior to launch.

Three dollars buys a handy siphoning device which attaches to a garden hose. The device is basically a tube with three openings. One end is for discharge, the other for garden hose attachment and the third, which is an extension running at right angles to the main piece attaches to the suction hose. Suction is created by water from the garden hose passing across the opening of the suction hose attachment. This gadget could be used for trailered boats without drains or if a boat needs to be dried out while at dock-side.

Less effective but several dollars cheaper, the garden hose can be used by itself. Simply fill the hose with water and hold a thumb over each end. Place one end under the water that is in the boat and lay the other end on the ground or dock. Release your hold on the hose and the original flow of

• **Continued on page 23**



DEPARTMENT OF LETTERS TO THE EDITORS, FIELD NOTES, AND ITEMS OF INTEREST

Conducted By Rod Amundson

Although the hunting seasons on doves and marsh hens have been open for several weeks, October marks the beginning of the big game and grouse, squirrel, raccoon and opossum seasons with the rabbit, quail and wild turkey seasons set to open in November. At press time the waterfowl seasons had not yet been announced.

We live in a land of plenty at a time of the greatest economic expansion in history. Wildlife is often spoken of and written about as a dwindling natural resource. This is true in the case of certain species, but where North Carolina is concerned the length of our hunting seasons and the liberal bag limits on most species would certainly indicate that game in general is at least plentiful.

Hunting began September 1 with the opening of the season on rails and gallinules along the salt water marshes. It continues through March 1 when the season on 'coons and 'possums closes.

This adds up to six months of hunting of one kind or another, and if you want to stretch the issue, there are some counties where foxes may be hunted the year around, and such varmints as crows, wildcats and groundhogs may be hunted statewide throughout the year.

There are two good reasons for this: an agreeable climate and a wildlife conservation program that is second to none in the nation.

A word or two should be said about the availability of hunting territory. There are almost 700,000 acres of public hunting lands in North Carolina. While a farmer-hunter problem exists near our most populous industrial areas, most Tarheel farmers allow hunting on their land to sportsmen who have the courtesy to ask for permission. Over the years the Commission has distributed literally millions of free "HUNTING BY PERMISSION ONLY" posters to farmers who are willing to go half way with their hunter friends from town.

Joel Arrington

The ruffed grouse is one of the great game birds with which our state is favored.

It may be said safely that North Carolina has less of the so-called farmer-hunter friction than any other of the fifty states.

"Wanted"

THIS "important notice" will be posted on the Commission's dove, deer and other management lands. It is a part of the continuing effort by the Commission to remind hunters and other gun handlers that, for the most part, it cost no more in time or money to play the game safely. The returns on little or no investment are quite high. The reward you receive is paid off in a membership in one of the largest "clubs" in the state. We might call the organization a happy hunters fraternity. There will be over 400,000 of us roaming the woodlands, fields and marshes of North Carolina this season. All but a very, very few will renew their membership next year. Will you?

These posters will be available free of charge from the Commission. Clubs, sporting goods dealers, landowners, or individuals interested in participating in this safe hunting endeavor are invited to write the North Carolina Wildlife Resources Commission, Box 2919, Raleigh for copies.

WANTED

SAFE HUNTER

Description:

- Treats every gun as if it were loaded
- Identifies his target before he shoots
- Practices self-control
- Opens his action and unloads his gun when it is not in use

REWARD:

Safe trip and happy memories

Skin Skiing

DEAR SIRS: The article by Mr. Burdick on the subject of water skiing which appeared in the current issue of Wildlife was interesting and well written. However, isn't such an article out of place in a wildlife magazine?

I am one among many who resent the ever increasing encroachment of various recreationist activities upon areas heretofore reserved for wildlife and for those who are interested in wildlife. One of the

KNOW YOUR PROTECTOR

C. D. Jones

Wildlife Protector C. D. Jones, stationed at Walnut Cove in Stokes County, was born on July 18, 1936 in Nash County, a son of Mr. and Mrs. John Thomas Jones. He is a graduate of Red Oak High School. After three years in the army Mr. Jones was employed by The Taylor Gin Company of Nashville, North Carolina and The North Carolina Forest Service. He attended Pre-Service Training School for wildlife protectors at the Institute of Government in Chapel Hill in June, 1962. Mr. Jones was assigned as Wildlife Protection Trainee to Henderson County in July of 1962. On December 1, 1962, he was appointed Wildlife Protector for Stokes County. He has completed three in-service training schools since employment.

Mr. Jones is married to the former Barbara Ann Taylor of Nashville, North Carolina. They have two children, Glenn, four and Dan, two. They now make their home in Walnut Cove, where they are members of the Walnut Cove Baptist Church. He is Training Union Activities Leader in the church and a member of the Walnut Cove Lions Club.

DIVISION ENFORCEMENT RECORD FOR JUNE

HUNTING & FISHING:

Persons checked	39,858
Total prosecutions	985
Total convictions	963
Total cases not guilty	4
Total cases nol prossed	13
Total cases dismissed	5
Total fines collected	$2,807.80
Total costs collected	$8,344.39

BOATING:

Boats checked	7,909
Total prosecutions	360
Total convictions	351
Total cases not guilty	1
Total cases nol prossed	7
Total fines collected	637.90
Total costs collected	$3,078.95

All fines and any arrest or witness fees are paid into the school funds of the counties in which the violations occurred, and no part of the fines or costs collected are paid to the North Carolina Wildlife Resources Commission or its personnel.

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very biggest threats to our wildlife program is that posed by the federally sponsored recreationist programs being established upon our wildlife management areas, by means of which many portions of our wildlife areas are being turned into picnic grounds, boating marinas and various carnival type recreations, for the use of persons whose interest in wildlife is non-existent. This is the threat which presently hangs like a dark cloud over the Uwharrie Management Area, and which I understand is already becoming a sad reality in other wildlife management areas.

As a regular purchaser of hunting and fishing licenses, I resent the use of funds of the Wildlife Resources Commission in establishing so-called "fishing access" areas which are used far more by the boating and skiing public than they are by the fishermen. I also resent the imposition upon our already overworked wildlife protectors of duties which have absolutely nothing to do with wildlife, including the enforcement of laws relating to high-powered boats used by water skiers. As a subscriber to your magazine, I am offended to observe that recreationism has begun to infiltrate even our wildlife literature.

While it is true that our public waters should be open to all legitimate use—and have in fact been virtually taken over by the water skiers—let us at least keep our wildlife literature unpolluted by such foreign matter. PARKER WHEDON, CHARLOTTE.

Although *Wildlife in North Carolina* is essentially "devoted to the protection and restoration of our wildlife resources and to the improvement of hunting and fishing in North Carolina" (see masthead), it has become something of a family magazine that attracts people of a wide range of interests. The General Assembly gave the Commission jurisdiction over boating safety several years ago, and the editors believe that occasional articles of interest to boaters and water skiers are in order. In general we agree with Correspondent Whedon's views. —Ed.

Deer Reader

DEAR SIRS: I was very interested in your article about deer in the July issue of Wildlife. I know very little about these magnificent animals, and I hope that you have more articles about them in the near future.

I have been receiving Wildlife for almost two years, and enjoy it very much. Keep up the good work! RICHARD HOLLAND, FRANKLIN.

Something Missing

DEAR SIRS: Yesterday I received my July issue of "Wildlife In North Carolina," or rather the cover to my July issue. No one on this end of the line can locate the rest of the magazine.

Being a major in wildlife conservation and a summer employee of the Fish and Wildlife Service I am greatly interested in your wonderful publication. Is there any way I might get another copy of this month's issue; please inform me if it's possible. I enjoy your magazine very much. EUGENE O'BRIEN, JR., UNIVERSITY OF NEW HAMPSHIRE.

Our July issue marked the outset of a new offset printing process, and a change-over from letter press to offset had its headaches. Reader O'Brien was furnished a complete copy. The cover he received, by the way, was printed by the letter press method!—Ed.

Bird in the Hand

DEAR SIRS: With the dove season at hand—dressing doves will be in order. An easy way to dress doves: first get a pair of kitchen shears and cut the tail feathers, the head, and the wings close to the body. Then take the doves to an outside spigot and turn on the water; with the water running over the dove massage the dove with your hands. The feathers and the pin feathers will come off easily. Presto! the doves are cleaned in record time. To keep feathers from messing up the yard, get an old cardboard box and punch some holes in the side for water to run out, then all you have to do is throw away the box after your cleaning is finished. ELLIS SIMON, KINSTON.

Help Wanted

DEAR SIRS: Would you have any information on or refer me to a source of

information regarding the leasing of hunting, fishing and any other recreational uses to a club or interested group. I have 275 acres of my own and manage a total of approximately 450 combined with mine.

I am interested in contracts and prices received for leasing privileges. We have good quail hunting now and it could be improved with more feeding stations if I can make it profitable. E. C. TATUM, JR., RAMSEUR.

Whodunnit?

DEAR SIRS: Much to my pleasure I have recently started receiving your fine magazine. Apparently this was a gift subscription but I don't know from whom and your circulation department doesn't have that information. I am afraid some one must think I am ungrateful and it occurred to me that if you can mention this situation in your letters section it might get the attention of the donor. For that unknown friend's knowledge, and yours too, I enjoy the magazine very much. JOHN B. MAYO, RALEIGH.

When Commission Chairman Orville L. Woodhouse, Grandy, resigned for business reasons, Lee L. Powers (center), Lake Lure, succeeded him, Walter Lambeth, Jr. (left), Charlotte, was elected Vice Chairman, and Phil Ellis, Holly Springs, Secretary.

• **Continued from page 20**

water from the hose creates sufficient pressure differential to start the flow from the boat. In this case, the only drawback is that the discharge end must be lower than the intake end. This is basically the same as siphoning, which needs no discussion, the only difference is that you let the water do the initial work rather than your lungs.

Starting with the wooden bailer we will list a few of the more "primitive" methods for removing water. This handy boating device, the wooden bailer that is, can be made around any backyard workshop in ten minutes and could be used for moving everything from corn to crushed ice. There are several plastic bailers on the market which sell for about a buck and a half. These are more attractive and will weather better. If a plastic bailer is to your liking, don't forget that a few minutes with a pocket knife will turn the plastic bleach bottle into a very fine bailer.

A good size boating sponge is always a handy item to have aboard. One name brand giant size sponge (7" x 12") sells for $2.25. A sponge, which can be used for numerous chores, is handy for getting those last drops out of the bilge and in very small boats the sponge may be all that is needed for this age-old problem.

Space will not permit a description of the various ways in which one can splash, kick or push water from a small craft. Such practices are usually taught in water safety classes and may come in very useful. It would be good if all boaters could be exposed to these basics.

Another valid method of removing water from a boat, which may be used as a last resort, is to simply turn the boat over. This is a good source of backstrain so best get help when over-turning all but the smallest of boats. Since this would be a trifle difficult with an outboard runabout, I personally perfer and heartily recommend one of the methods further towards the top of the list. However, any of the methods mentioned might spare pride and limb under certain boating conditions.

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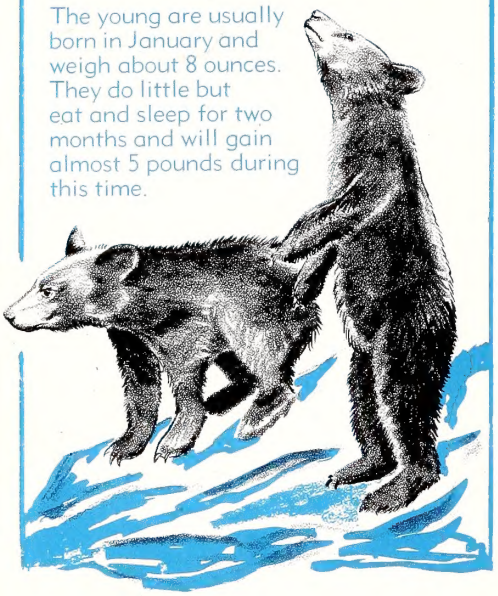
Bear Facts

The heavy black or dark brown fur of the bear gives him a bulky appearance, often making an adult look heavier than the normal 200 pounds. The black bear has little or no distinct hump at the shoulder like the grizzly and others.

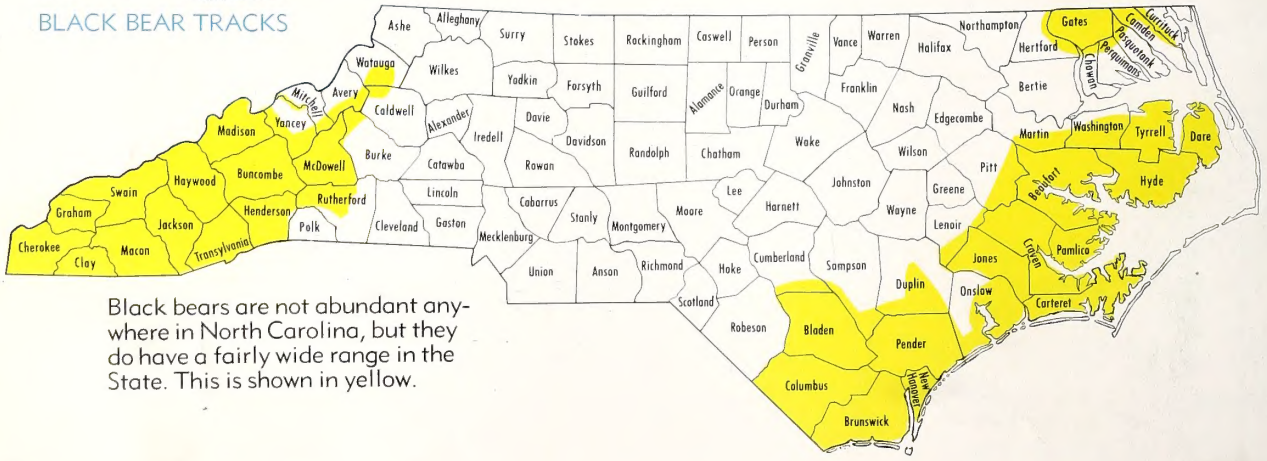
The young are usually born in January and weigh about 8 ounces. They do little but eat and sleep for two months and will gain almost 5 pounds during this time.



D. RAVER

Although black bears will eat fish and a small mammal now and then, the usual diet consists of acorns, blueberries, apples, wild grapes, beech nuts, and when they can find it, honey.

BLACK BEAR TRACKS



Black bears are not abundant anywhere in North Carolina, but they do have a fairly wide range in the State. This is shown in yellow.

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Wildlife in north carolina

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James Parnell

Night Watchman

The great horned owl is every bit as fierce as he appears. Often called the feathered tiger of the air, it hunts by night on wing feathers edged in down for noiseless flight. Powerful beak and talons make short work of rats, rabbits, snakes, and an occasional chicken. Friend or foe, the great horned owl is here to stay.

Wildlife in north carolina

The official publication of the NORTH CAROLINA WILDLIFE RESOURCES COMMISSION, Raleigh. A monthly magazine devoted to the protection and restoration of our wildlife resources and to the improvement of hunting and fishing in North Carolina.

State of North Carolina

TERRY SANFORD
Governor

North Carolina Wildlife Resources Commission

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COVER

For its size—scarcely as large as a bobwhite quail—, the screech owl rates as one of our most beneficial birds. The mice that it consumes would certainly destroy quantities of grain and fruit if left unchecked. For more interesting facts about this owl, read "Inside the Outdoors" on page 23. Color transparency by Dr. F. Eugene Hester.

Wildlife in North Carolina recognizes the need for close cooperation between State and Federal conservation agencies and the people who hunt and fish—to bring about a restoration of our renewable resources. The Editor gratefully receives for publication news items, articles, and photographs dealing with the North Carolina out-of-doors, but reserves the right to reject materials submitted. Full credit is given for all materials published.

* * *

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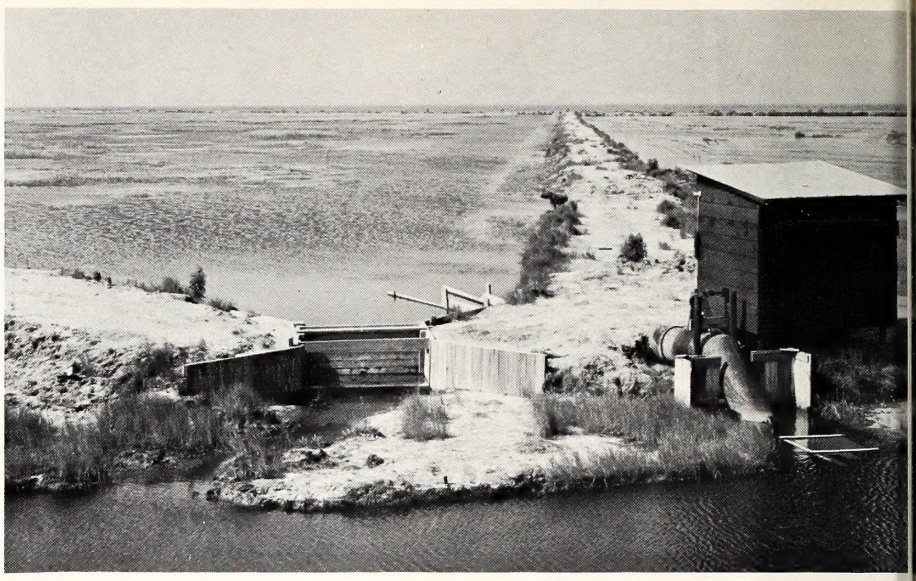
More Duck Hunting

by John R. Parker, Jr.
Photos by the Author



A new duck hunting area will be open to the public this season. Its opening comes as the second bit of good news for North Carolina waterfowlers this year. The first good news, of course, concerns the long-awaited restriction lifting on certain waterfowl species.

The Pamlico County Health Department, much interested in mosquito control, and the Wildlife Resources Commission, formulated a joint plan, which when carried out, would accomplish aims of both organizations.

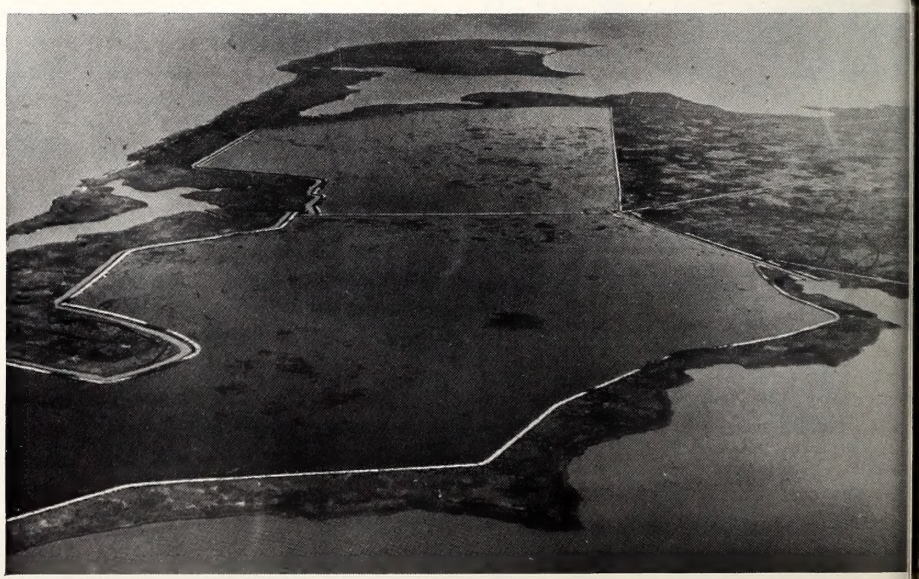
The plan has been implemented and soon hunters and others interested in waterfowl will enjoy the results. The project has been supervised and coordinated by Charles J. McCotter of the Pamlico County Health Department in association with Waterfowl Biologist Otto Florschutz and other Commission personnel. They have transformed a relatively useless salt marsh into a potential waterfowl haven.

Located in waterfowl country, the new impoundment lies east of Lowland on a point of marsh jutting into the mouth of the Pamlico River. Pamlico Sound and its adjoining estuaries have a long history of waterfowling and Swanquarter and Mattamuskeet refuges are just 10 and 20 miles respectively northeast. Pamlico Point is now a duck hunting marsh by improvement.

Much of man's work with wildlife involves the repairing of that which has been tampered with—rebalancing the balance. However, the Pamlico Point impoundment is a prime example of how a natural type of habitat can actually be improved by game management.

The area now inclosed by dikes was originally salt marsh. The primary vegetation was needlerush, sawgrass, and saltgrass. Part of the Goose Creek Wildlife Management Area, this particular marsh provided little in the way of game habitat. But it did provide some breeding sites for the salt marsh mosquito.

Salt marsh, unlike fresh water inland swamps, affords the exact breeding requirements for salt marsh mosquitoes because of the periodic drying of the marsh floor upon which the eggs are laid. Subsequent tides or rainfall produce the hatch. This type of marsh is sometimes ditched so that the low areas will not hold rain or tide water which is needed in the life cycle of the mosquito. An equally effective method of mosquito control is impoundment.



The water level of the impoundments will be maintained by two pumping stations and seven water control structures like the ones shown in the photo above. Deep water lies to the left of the center dike; observe signs and use caution when wading in these impoundments. The aerial photo at right shows about one-half of the area to be flooded. The portion at far right is unburned needlerush and will be flooded by the time that you read this.

Here then, through the use of modern wildlife management know-how and health department practices, was an opportunity to help rid man of an insect pest and at the same time establish better habitat for waterfowl and fur bearing animals. This in turn would make available better waterfowl hunting and provide a place to observe nature at work. The Pamlico Point hunting area helps to fill all of these needs.

The plans prepared by both organizations called for diking by the County Health Department. Pumping equipment, water control structures, work sheds, etc., would be furnished by the Wildlife Commission.

Heavy equipment was moved to the isolated tip of Goose Creek Island by barge and in June, 1963, work began. As many as four draglines were operated at one time in dike construction. Initial work involved the digging of a central access canal and a turning basin. From that point, work continued with diking which when completed would form four brackish water sub-impoundments of approximately 200 acres each.

Ralph Keel, summer assistant to the waterfowl biologist, is shown here checking the water level at one of the control structures. Ten to twenty-one-inch depth is desirable.

When work was completed in March of this year, 12½ miles of dikes had been constructed at a cost of $18,000. A lot of money, but the Health Department estimates that it would have cost $15,000 to ditch the same area. This would have reduced the mosquito problem, which is highly important, but would have added nothing in the way of wildlife to the area nor would it have offered the hunters of the state better hunting. In fact, ditching may have reduced hunting since there were a few small pot-holes on the marsh that might have suffered.

The installation of seven water control gates and two high capacity pumping stations and other necessary work was completed by the Commission at a cost of about $7500. Controlled burning of the existing marsh vegetation on two of the subimpoundments was followed by flooding in April of this year.

The expanse of shallow water apparently looks inviting to ducks. About 50 local puddle ducks started using the area shortly after the flooding. Further and even better evidence that the area will be a success is that a few broods of black ducks were sighted this summer. It's hoped that more broods will appear next year; the potential is there.

By late August, the waterfowl population had risen to about 150. Most of these, perhaps two-thirds, were migratory blue-winged teal and the rest local blacks, a gadwall or two and a few resident teal. Most teal, about 90 percent, winter south of the United States and start appearing in such areas as Pamlico Point in late August.

Waterfowl Biologist, Otto Florschutz, says that the area receives about 60 inches of rainfall annually. He said that this should be enough to reduce pumping in the fall to a minimum. During periods of drought, however, the big pumps will be run as needed to maintain the water depth at from 10 to 20 inches. The level must be maintained if the important submergent types of vegetation are to grow properly and produce plentiful amounts of food for waterfowl. To assist in water control and periodic inspections of the impoundment, the Commission has employed Mr. Joel Mercer, a well-known native of the area as caretaker.

Emergent vegetation such as salt marsh bulrush, three-square, spikerush, and smartweed is already present in good quantities in the two subimpoundments which where flooded earliest. The duck food is more plentiful than expected for the first season according to Biologist Florschutz and there should be sufficient amounts for wintering birds. Other foods that are appearing naturally but in smaller quantities are the submergents: widgeon grass, sago pondweed and southern pondweed. Wild celery and redhead grass have been introduced from Currituck Sound. The natural-appearing submergents have been supplemented by some 120 plantings.

The vegetation on the impoundment will be carefully checked for growth rate and the ability of various species to "take hold." Other future work includes nesting studies, banding, hunter bag surveys, maintaining records on pumping requirements, cost, etc. Dike stabilization, including grassing, repairing of storm damage, if any, and general upkeep will be assisted by the County Health Department.

Hunting

Hunting will be permitted on the entire impounded area. Present plans require only that hunters have the usual duck

Waterfowl biologist Otto Florschutz completes the banding of a young black duck hatched on the impoundment last spring.

stamp, and proper hunting license. In other words, special permits will not be needed. Bag limits, hunting hours, etc., will, of course, conform to statewide waterfowl regulations.

Blinds can be built by individuals but each blind and the area around it must still be considered open for public use on a first come, first served basis. Courtesy and common sense should determine whether the builder or another hunter is to use the blind if both parties arrive at the same time.

Since there is little if any blind building material, other than needlerush, on the impoundment or its perimeter, the type of things needed to build semipermanent blinds will have to be taken to the marsh by boat.

Portable blinds, camouflage netting, or just the ability to remain motionless, plus a few decoys may be all that is needed to bring the birds within range.

The Wildlife Resources Commission presently does not plan to build permanent blinds. It is felt that hunters will enjoy more the freedom of choice permitted by the "as you like it" type of hunt. This type of hunting can work if all hunters respect the rights of others. "Sky busting," dike walking and general discourtesy are unwelcomed on a duck marsh. This is especially true at a time when a hunter has a flock of blacks convinced and they are about to pitch out and drop into his decoys.

As mentioned, Lowland is the nearest town to the impoundment and the Oyster Creek landing furnishes the nearest access. This access point is privately owned; therefore, launching and parking facilities should be respected as such. The landing is at the end of County Road #1235.

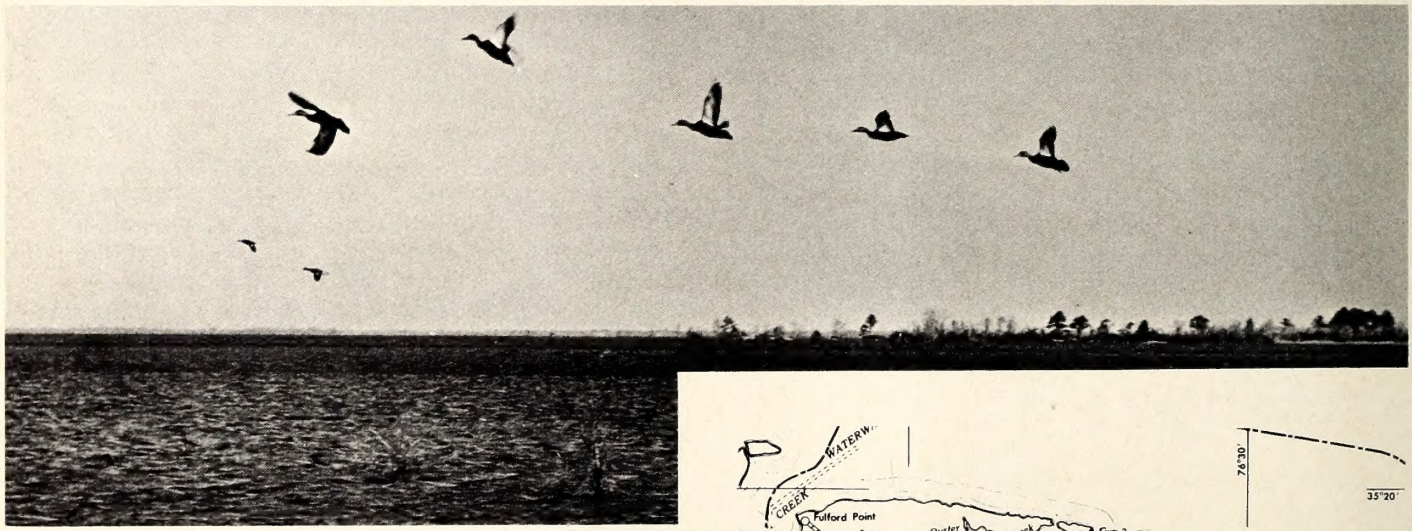
The impoundment can only be reached by water and the three-mile trip, depending on the size of your rig and the weather will take from 10 minutes to a half-hour. This water does get rough and the same cautions and safety practices that are in use for summer boating should be applied here. If you use a smaller, open boat, the midpart of the open water trip can be cut out by going through a narrow drainage canal that starts about a half-mile from the landing. Hunters are requested to use the main approach canal which leads to the pumping station to enable biologists to make hunter success surveys.

The shallow water impoundment is more attractive to puddle ducks such as blacks, mallards, pintails, teals, etc.; however, don't be surprised if a flight of canvasbacks drops in from the vast reaches of Pamlico Sound. Biologist Florschutz says that a large flock of geese normally utilizes the immediate sound area and that there may be some honker utilization of the impoundment.

There will be other nongame visitors on the marsh such as herons, egrets, yellowlegs, gulls, and ospreys. Care should be taken not to down any of these birds. Some rails may utilize certain areas and can be hunted. However, the impoundment furnishes very little good rail habitat.

Trapping, in season, will be permitted on the impoundment for furbearers such as muskrat and mink. Regulations will conform to the Pamlico County trapping laws.

Will you get your limit on each and every hunt at Pamlico Point? Probably you will not have this type of success, but it is possible. Will there be bluebird days at Pamlico Point? You can bet on it. At any rate, here is a place to hunt ducks. It is truly a feather in the duck hunter's cap and I would compare it to a duck call reed that never "freezes" or a pair of hip boots that "refuse" to step into a deep hole.



Hunters are cautioned to observe these signs posted on the area. The map at right shows location of the new hunting area and a suggested route of travel for smaller boats. It eliminates about half of the open water trip.

Wildlife ON THE AIR

Photos by Joel Arrington

FOR over a year now, sportsmen over the state have been tuning in to "Tar Heel Wildlife," a weekly 7½-minute radio program aired over more than 50 radio stations in North Carolina. Several years ago, the Wildlife Resources Commission produced a similar program. Requests that it be re-instated built up until the Commission began recording "Tar Heel Wildlife" in May 1963.

Every program opens and closes with recorded animal sounds—from bullfrogs to bull alligators, including ducks, geese, quail, and fox hounds. The topics of discussion may include anything of interest to the sportsman-conservationist. Rod Amundson, the editor of this magazine, is the moderator of the program. His guests include experts on fishing, hunting, natural history and conservation. The tone of the discussion is usually chatty, always informative, with the emphasis on seasonal fishing and hunting tips.

The radio stations which carry "Tar Heel Wildlife" are listed below. Find the station on the list nearest you and check with them for the time the program is broadcast.

Program moderator Rod Amundson (right, above) and guest Luther Partin tape a show in the studio. Charter boat Skipper George Bedford chats at right.

Station WCGC
Belmont
Station WFGW
Black Mountain
Station WBBB
Burlington
Station WBAG
Burlington
Station WKTC
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Station WGIV
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Station WBT
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Station WTYN
Tryon
Station WITN
Washington
Station WETC
Wendell
Station WKSK
West Jefferson
Station WIAM
Williamston
Station WPEG
Winston-Salem

Pine Production and Wildlife

by
Frank B. Barick
Chief, Division of Game

This is the text of a talk delivered last February to the annual meeting of the Halifax County Forestry Association. It may apply to you and your timber operations.

PEOPLE who own land want to manage it for maximum production of income. Through all of recorded history and until recent times land management has been an art, handed down from father to son. But during the past twenty years the development of heavy machinery and intensified research in both agriculture and forestry have converted land management from a family art to an industrial science. Small time family farming as a way of life is being forced out of the picture by industrialized production of food and fiber and regional competition reduces profit margins and intensifies the drive toward mass production.

As a result of these forces, many farmers can no longer make a living off their land and they are moving into town to find work. Others, especially those with large holdings, are finding that they can hold their lands and make them pay by converting from farming to forestry. Competitive production of livestock and grain or other farm crops requires large investments of machinery, but competitive production of timber requires only good advice.

We are fortunate in having several sources of good advice for forest land management in North Carolina. Local offices of both federal and state agencies have provided this advice for some time but more recently companies such as the Albemarle Paper Manufacturing Company, Union Bag-Camp Manufacturing Company and the Weyerhaeuser Corporation have been providing technical know-how and assistance to landowners in developing their lands for maximum production of pulp and timber.

In this program the landowner has little need for machinery or manpower once the cycle of production is started. The lands of eastern North Carolina are well suited to timber production and the landowner is able to realize a reasonable return. He can successfully compete with landowners in other sections of the country because timber will grow faster here than in most other parts of our nation.

Various Practices Used to Convert to Pine

Various practices are being used to convert both farm and forest land to production of pine. While most of them use heavy machinery it is usually a "one-shot proposition" and in most cases it is relatively easy to establish the pine plantations.

We had an opportunity to view the results of several of these practices in northern Halifax County with Mr. Wallace Cawthorne, Forester for the Albemarle Paper Manufacturing Company. We saw many acres of pasture that had been planted to pine. This is perhaps one of the easiest of the various operations to put into effect.

Another practice is conversion of upland hardwood forests by removing merchantable timber, girdling and poisoning all large **un**merchantable trees, and destroying the smaller trees and shrubs with a heavy disk. In some cases this is followed immediately by planting; in other cases the killed brush is burned before planting.

Burning alone is also an important pine management practice. It is an effective means of reducing hardwood competition in established pine stands. It can also be used to expose the mineral soil, in preparation for natural seeding to pine.

A practice we did not observe on the trip, but one which is performed in some areas, is drainage of wetlands and planting to pine. This has been done most extensively on pocosin or peat soil areas but more recently it is being done on bottomland hardwood sites.

These, then, are the ways in which lands are being converted to pine production: planting, disking, girdling, poisoning, burning and draining. And lands being converted are: cropland, pasture, upland hardwood forest, and bottomland hardwood forest. In addition, these same methods are being used to accelerate pine production on peat soil, pocosins and upland pine sites.

Conversion to Pine Affects Several Different Game Species

The picture of land use is rapidly changing. Where a few years ago we had corn or cotton or pasture we now have pine. But this conversion to pine is affecting more than just the chickens and cows. It is also vitally affecting the favorite form of recreation of many of our people. The favorite form of recreation

we are referring to is, of course, hunting. And just how pine production is affecting hunting is what we wish to consider here.

Before we can consider the question of effect on wildlife we must consider what species are involved. Eastern North Carolina has always been pretty much of a hunter's paradise. Many species of game abound throughout this section.

The most important big game animal is, of course, deer. Bears are rather scarce along the western edge of the Coastal Plain, but they are more common farther east. On the borderline between big game and small game we have wild turkeys and raccoons, both of which furnish considerable sport. In the small game category we have quail and rabbit and squirrels. These three species absorb about 75% of all hunting effort on a state-wide basis. Another group of wildlife which provides much sport at certain localities is waterfowl. Ducks winter in goodly numbers along most rivers and in nearly every hardwood swamp of any size.

With such a variety and abundance of game it is no wonder that much of eastern North Carolina has a reputation for being a hunter's paradise. And it is no wonder that hunters come to this section from all over the state and even from other states.

The presence of these several species of game is no accident. They are here because proper conditions of food and cover exist. If the amount or type or pattern of distribution of this food and cover is changed it will cause a change in the populations and distribution of these game species.

Deer and bear for example, are forest species and a general increase in forest acreage would be beneficial to them and tend to increase their numbers. But deer feed on grass and browse. Browse as you know is defined as the leaves and twigs of trees and shrubs. In the Coastal Plain this means hardwood trees and shrubs, since deer do not browse on southern yellow pine.

In order of importance, the primary source of deer food is browse, followed by grass and cultivated crops such as grain or soybeans or peanuts. Mast, or acorns, is also highly preferred when it is available. In order of preference, the most highly preferred deer foods are mast and cultivated grains, followed by pasture and then browse.

Thus, it is obvious that the systematic elimination of cropland, pastureland and mast-producing oak, (i.e. hardwood) forests will substantially reduce the potential of the land to produce deer. The movement of people off the land will reduce some pressure against the deer and provide more acreage of deer range. For a few years after farm abandonment the deer production potential increases, but as fields are converted to pine, and the grass is gradually choked out and replaced by a forest floor of dead pine needles, the amount of deer food is drastically reduced.

To be sure, many stands of pine have an intermixture of understory of hardwood which provides browse. But the amount of food provided by an acre of browse is only a small fraction of the amount provided by an acre of pasture or winter grain. A recent U. S. Forest Service study, for example, showed an average of 40 pounds per acre of usable browse over extensive acreages of forest land in north Georgia. Compare this with four tons of hay that can be produced on an acre of grassland. On this basis, one acre of pasture produces as much food as 200 acres of forest.

Thus, the immediate effect of farm abandonment will be an increase in the deer population. This will level off in about 10 to 15 years and then gradually decrease. On the other hand, conversion of hardwood forest land to pine production will result in an immediate reduction in deer carrying capacity.

The effect on bear will be very similar to that on deer except of course that bear populations never build up to anywhere near the size of deer populations. Elimination of hardwood swamps is especially hard on the bears since they derive much food from the fruits and nuts produced on these sites. Also elimination of the wet areas will make both bears and deer, as well as other game, more vulnerable to hunting.

Conversion of hardwood swamps to pine production will also have a very serious effect on raccoons and wild turkeys. We will show later that conversion of hardwood swamps to pine is really not profitable land management and we hope that you, as land-owners, will see to it that this is not done. Even conversion of **upland** hardwood to pine will have a deleterious effect on squirrels, turkeys and raccoons but if you insist on converting your **bottomland** hardwood swamps too, you can expect to lose many of your coons, **most** of your squirrels and turkeys, and **all** of your ducks.

Pine trees produce seeds and squirrels and quail eat these seeds. However, everyone knows that if you want to kill a mess of squirrels you go to an oak woods rather than a pine thicket. So conversion of upland hardwood forests to pine production will force the squirrels that remain to the hardwood bottoms. And if the hardwood bottoms go, the squirrels will go with them.

This is but one example of farm abandonment. The final effect on the carrying capacity for game will depend on timber types that ultimately take over.

Quail and rabbits are farm species and they will be the hardest hit by conversion of crop and pasture land to pine forest. Both species will probably experience a slight increase immediately after farm abandonment but this increase will not last more than about five to ten years.

Wildlife Has Tremendous Economic Potential

We do not mean to imply that 15 to 20 years from now there will be no deer or quail or turkeys in eastern North Carolina. But we can say most emphatically that all-out pine production is not compatible with maximum production of game.

However, we must be realists and face the economic facts of life. Since the pine

tree constitutes one of North Carolina's most effective weapons in the current battle for economic survival, we must learn to live with it. And in learning to live with it we must seek ways of growing our pine trees which will also allow us to preserve as much as possible of our wildlife heritage.

Preserving our wildlife in sufficient numbers to provide good hunting is important. It is important not just as means of providing an afternoon of sport for a few people. Providing opportunities for hunting has an economic importance too. And the economic value of hunting is increasing more and more rapidly each year.

It is estimated that by the year 1980, when the trees which you planted this year will be ready for their first thinning, the population of North Carolina will have increased by about 20% to over 5.5 million. During this same period the population of the United States will have increased by about 30% to about 240 million. During this same period the work week will continue to decrease and time for recreation will increase. The President's Committee for Outdoor Recreation Resources Review estimates that the time available for recreation will triple by the year 2000.

Each year more and more money is being spent on recreation, especially on hunting. Even today, on many areas hunters gladly pay $3.50 to $5.00 and more per day for the privilege of hunting deer. Considering that the long term average for killing a buck deer in North Carolina is 20 man-days of hunting, every buck killed has a recreation harvest value of $100. Considering the fact that good deer range can support one deer per ten acres, a thousand acres could support a hundred. Considering that a healthy deer population can produce an annual harvest of 25% or more, this 1000-acre tract could produce an income of $2,500 per year from deer hunting even at today's prices for recreation.

This price will go up as time goes on. And it is not inconceivable that with the current upward human population trend and increasing demand for hunting opportunity, that a piece of land will some day produce more in revenue from hunting than from timber production. We are already approaching this situation on some game lands and the long term trends point strongly in this direction.

Damaging Effects of Pine Tree Forestry Can Be Reduced

Since hunting as a source of revenue holds so much promise for the future, what can we, as owners and managers of land, do to see to it that the current popularity of the pine tree does not eliminate our future opportunity to capitalize on the increasing demands for recreational hunting? How can we produce pine trees, and turkeys and deer and quail and coons and squirrels and rabbits and bears and ducks? How can we produce a crop of wildlife on the same land on which we are producing a crop of timber?

There are at least six different practices which you can follow which will help to maintain fair to good game populations even on areas which are devoted to production of pine. Let us examine these practices and see what they can do for us.

First, management units should be kept as small as possible. Some foresters like to think in terms of large blocks, up to 1000 acres in size, of single-aged trees, but this is potentially one of the most damaging forms of forestry insofar as game is concerned. Actually, it does not fit in with the past history of the land and forcing this pattern upon the land has few if any practical advantages.

In the course of its development from planting to final sawtimber harvest the pine forest passes through various stages of growth. Some of these, such as the first five to ten years after planting can be quite productive of quail and rabbits. Other stages such as that from initial crown closure at about age 15 to the second or third thinning, contain little if any food. Thus a 1000-acre area all in the same age class with nothing on the ground but dead pine needles would be a "biological desert" in a true sense of the word, for no game can survive on a diet of dead pine needles.

If, however, this same 1000 acres were broken up into various age classes, some productive and some not, some parts of the area would **always** be in a productive condition and we would have a **sustained** crop of wildlife over the years.

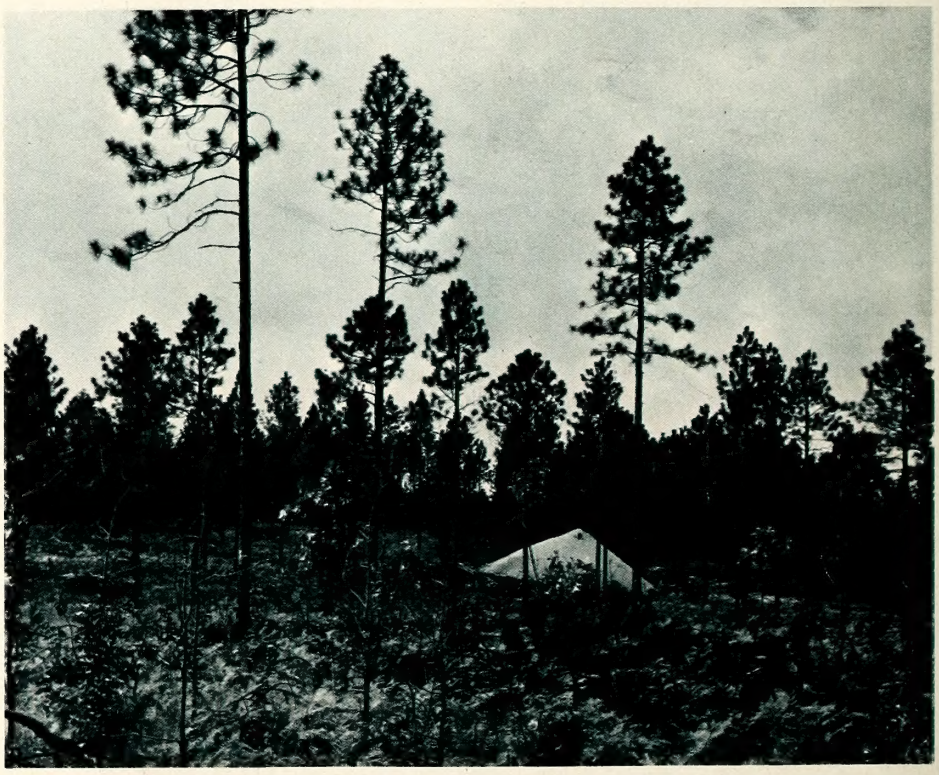
Actually, the concept of small units is the natural sequel to current and past land use. Thus, it should be no problem to maintain a variety of different age classes. On a 35-year rotation, maintenance of an equal distribution of five year age classes in units of 25 to 200 acres should present no problem even in intensive forestry.

The main argument which some foresters would use against small units of management is that it is not conducive to large volume trucking. This difficulty, however, is largely eliminated by increasing mileage and quality of access, and this practice constitutes our second recommendation.

Our third recommendation is that all woods roads, or at least the shoulders of such roads, should be fertilized and seeded to grass. Seeding to grass will stabilize the roads and at the same time provide prime deer feeding areas. Turkeys too will use such lanes for picking insects, and rabbits will use these strips for nesting and feeding.

The improvement of access to allow management on small units also improves and conditions for implementation of controlled burning and this constitutes our fourth recommended practice. Con-

• **Continued on page 23**



Large tracts of pine woods should be divided into stands of trees of various age classes. This cutover forest contains seed trees for natural reforesting.

NORTH CAROLINA WILDLIFE

RESOURCE-O-GRAM

A ROUNDUP OF THE LATEST WILDLIFE NEWS

Waterfowl Season Opens—Geese, Then Ducks

The 1964-1965 waterfowl season gets under way November 7 when the season on geese opens except on Currituck Sound, where the goose shooting will be delayed until the opening of the duck season on November 14. The goose season will run through January 15, with the duck season due to close January 2. Bag limits for geese are three daily, six in possession. The same limits apply to ducks with special restrictions on wood ducks, mallards, canvasbacks and redheads. Complete regulations are published by the U.S. Fish and Wildlife Service and obtainable from the Wildlife Commission or all U.S. Post Offices.

Rabbit, Quail, Turkey Seasons Open November 21

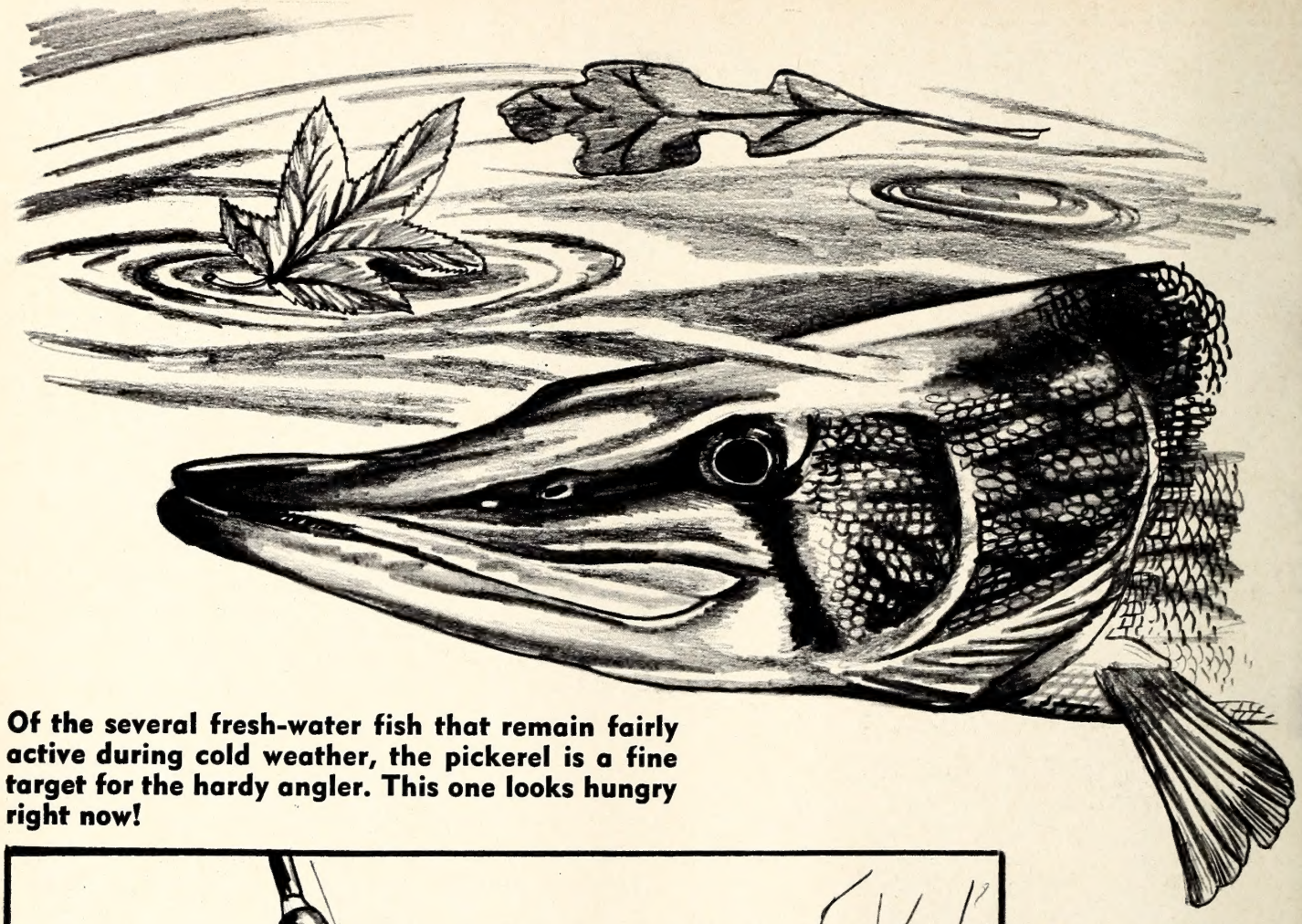
For the second time the seasons on rabbits, quail and wild turkey get under way in advance of the traditional Thanksgiving Day opening. Opening date is November 21, almost a week in advance of Thanksgiving. Bag limits for rabbits are 5 and 10; quail 8 and 16; turkey 1 and 2 with 2 per season. No open season on turkeys in and west of Stokes, Forsyth, Davidson, Lincoln and Gaston counties, and no open season in Anson, Beaufort, Carteret and Pitt counties.

Wildlife Planting Materials Ready

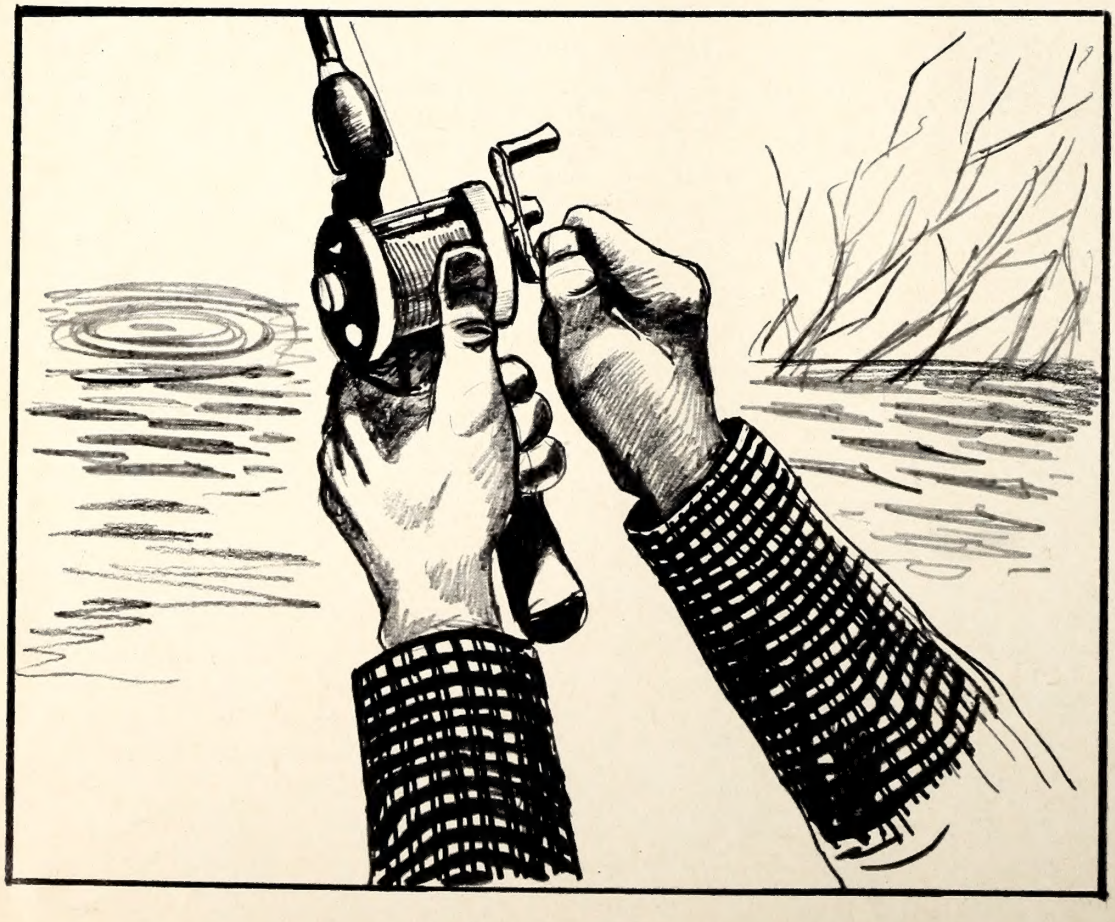
The Wildlife Commission's nursery has produced a bumper crop of seeds and seedlings for farm game habitat development and harvest is nearly completed. Persons wishing to obtain these materials free of charge may apply at local S.C.S. and County Extension Service offices, district game biologists and local wildlife protectors, or by writing Division of Game, Wildlife Resources Commission, Box 2919, Raleigh.

100,000?

With a sales campaign conducted by all Wildlife Commission personnel scheduled to end November 15, the Commission had hoped that the campaign plus an anticipated sale of some 5,000 Christmas gift subscriptions would bring total circulation of *Wildlife in North Carolina* up to or beyond the 100,000 mark. With an estimated readership of 5 persons per copy, the magazine would reach at least half a million people each month.



Of the several fresh-water fish that remain fairly active during cold weather, the pickerel is a fine target for the hardy angler. This one looks hungry right now!



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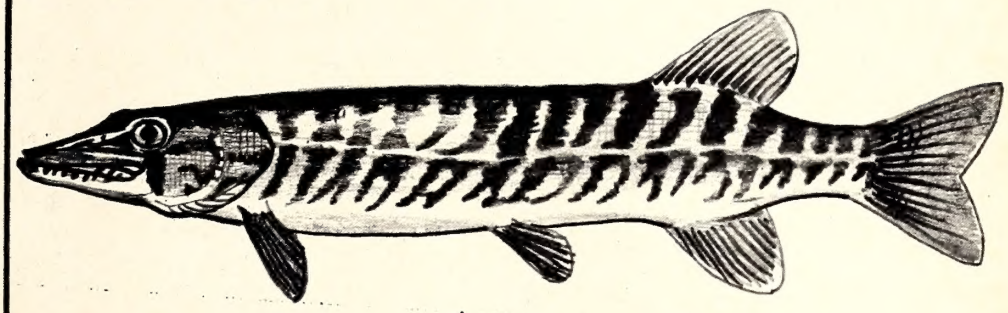
THREE PICKEREL LURES

Don't overlook the little redfin pickerel either. The "miniature muskie" doesn't get much over 13 inches long, but is ready for a fight. He's good eating, too.



FALL ICKEREL PARTY

A consistent party-crasher during the fall and winter is the black crappie. They take about the same lures as pickerel and hang out in the same spots.

Swamp Ducks

by
F. Eugene Hester
Photos by the Author

"HOW many ducks have you killed this year?" Bob asked.

". . . Well, I shot at a couple of woodies on opening day, a few minutes before sunset, but they were too high," I said. I picked up a decoy and tried to change the subject.

"I thought you were one of the best duck hunters around," Rupert said. "I know some fellows from Wilson who get their limit nearly every day."

I began to squirm and tried to figure out the best approach to take. It would never do to just admit defeat . . . and besides, I wasn't really defeated. I hadn't been out as much as I used to. I had hunted the local millpond and drifted a little in the creek, but on Saturday afternoons these places were pretty well crowded.

"Jim Crawford and Tom Clark have killed wood ducks and mallards every time they've been," my nephew continued.

Now my ability as a hunter was at stake. I came out fighting.

"Did they shoot 'em at a roost after sunset?" I asked, knowing that it's easy to kill ducks in this illegal way.

"No, sir!" he exclaimed. "They just know how to hunt ducks!"

I looked at the two boys and tried to figure them out. Were they serious about asking me what was wrong, or were they trying to get me to take them on a good duck hunt?

Everything was quiet, and they looked innocent.

But then, I knew these boys realized I would really put out the effort to prove I knew how to do something.

I watched them closely . . . not a sign of a trick. They patiently waited for my answer.

"I could get them if I really went after 'em," I said in a firm voice, trying to leave no doubt.

"Where would you go?" Rupert asked.

I paused, feeling that I might be sinking even further into their trap. Were these fellows just trying to be sure I knew how, or were they hoping to get into some secret hunting ground?

"I would go where the ducks were feeding," I said. "You can't legally kill 'em at a roost, so a feeding spot is the only place to go." This all sounded fine, but where is one of these feeding spots? I knew the question was on the way, so I tried to stay a jump ahead.

"If you want to know where they are, come up and spend the weekend with me. Bring your guns and hip boots or waders," I said.

They seemed satisfied and happy. I still didn't know whether they had tricked me.

At any rate, I had an idea that I was ready to work on. I knew how crowded the millponds were, how many hunters were drifting the rivers, and how the pass shooting was so heavy.

If you rule out roosts, pass shooting and rivers, I thought, there aren't many places they could be. If I were a duck, where could I go that I wouldn't be worried to death by hunters walking the banks or drifting by boat? I would go where there was good food and where hunters couldn't get to me. Something like a big swamp full of logs and enough deep water to make it tough to wade.

The more I thought about it, the more I thought this would be a perfect place. I remembered the Big Swamp where I had shot ducks ten years before. I had hunted by boat and never seemed to be able to get far enough into it. The trees and logs were so thick. And we could almost always hear those mallards and blacks calling, sometimes circling. But most of the swamp was too deep to wade.

Maybe we could go in from the head of the swamp and wade out until it got too deep. Somehow this seemed to be where the ducks just had to be.

The week moved along rapidly and early Saturday morning we were loading the guns and decoys into the car. As we drove through the dark, I thought how lucky we were that the weather wasn't cold enough to freeze the water in the swamp. That would really have messed things up.

On the way I prepared the boys for the long walk and the tough wading that they would have to do. The nearest automobile path ended about a mile from the swamp. The swamp was a big one, and we might have a lot of walking to do before we could get the ducks up.

Circling swamp ducks create real excitement. Bob watches as a flock of mallards swish over the tall tupelos and cypress.

"Our best bet might be to walk 'em up and try to get a few shots," I said. "Then we can put out decoys and wait for them to circle over if they come back."

We turned from the highway down a farm path. The going got rough and we decided to start walking.

We got the car out of the trail and began to load on our equipment. It was still dark, and everything was quiet. It's amazing how quiet everything is just before dawn. The lonesome and spooky sound of an owl broke the silence. The stars were bright, and the morning crisp.

Duck decoys, shells, lunch, gloves, and guns! Already we were pretty well loaded down with waders and heavy hunting clothes.

We could see a band of light in the east and knew that by the time we got to the swamp it would be sunrise.

It was hardly light enough to see when we left the car. We followed the trail, cut across a field, and finally followed the side of a little stream that we knew would lead to our Big Swamp.

"Look! Over here!" Bob exclaimed.

We looked around and there they were! A big flock of about 30 mallards or blacks. It was still too dark to tell. They were headed for the swamp, still half a mile away.

"We should have been here earlier," Rupert said.

"They'll be there when we get there," I replied.

My pulse quickened. Swamp ducks always have been my favorite. Blacks, mallards, and wood ducks always seemed to be a real challenge. I think their circling, circling, circling as they look things over and listen to your call is a real spine tingler. You keep wondering . . . will my decoys fool them? As they get lower and lower, you keep asking . . . are they low enough? And then you think . . . if I wait for them to get lower, will they make another pass or will they just go down on the other side of the swamp? That's what makes it so exciting.

As we pushed through the brush we passed a cypress tree. We must be almost there, I thought. We paused. In the gray light of daybreak we could see the gigantic swamp trees.

After a few more steps we were in the water. We stopped to make last minute plans.

We looked around and listened. Everything was still quiet. I'm sure those ducks must have come down somewhere in this swamp, I kept telling myself.

"Let's walk about 50 yards apart as we go into the swamp and see if we can jump 'em," I said. "We'll go as far as we can and then stop to put out the decoys."

As I looked out into the swamp, the boys began to move out on either side of me. When they were 50 yards away we began to move ahead. The water got knee deep quickly, and the logs made walking tricky.

We moved ahead slowly.

Now we could hear them. The ducks were really talking . . . quack, quack, quack, they went. We listened. They were sitting on the water and having a good time.

They must be about 400 yards away, I thought.

Both boys had stopped, wondering what approach we should take.

I signaled with an upraised hand, and we all started slowly toward the calling ducks. Blacks or mallards? I asked myself. Some people claim to be able to separate the calls, but I can't. Either would be o.k.

The going was slow and rough. Mainly it was all of the logs that slowed us up, and then the river channel was almost too deep for us.

After 30 minutes, we knew we must be approaching the ducks, but everything was quiet. Were the ducks moving ahead of us, or were we getting close to them?

We moved cautiously.

I could see a slight ripple ahead, and figured we were about

Used correctly, a few decoys can be a big help in bringing ducks within range. We placed them in patches of open water.

Hunting blinds are not necessary in swamps because of the abundant natural hiding places. Watch it! Here they come!

to get some action. After a few more steps, everything broke loose. Ducks got up everywhere. They were splashing and churning the water as they sprang into the air. It was really noisy.

As we cut loose with our guns, the entire swamp echoed and rechoed.

More ducks got up. There must be 50 of them in the air now, I thought. They turned and came overhead, but were too high to shoot. Most of them looked like mallards.

My nephews and I looked for our ducks and then got together to talk the situation over. They were really excited. Neither of them had scratched on the rising shots, so we had only one mallard so far.

"Let's put the decoys in a little opening," Bob said.

We moved out about 75 yards and found a spot. The water was about knee deep. It showed signs of a lot of duck usage. We started putting out decoys.

"I hear them!" Rupert whispered as he pointed out through the big gum trees. We could hear the little chatter they frequently make as they talk to each other in flight. They were too high and we figured they were just passing by.

We hid and waited. There was a long silence. From the far side of the swamp we could hear more ducks calling from the water.

"Will they act as live decoys and pull ducks to them?" Bob asked.

"I don't know," I said. "One of us may have to stir them up if they do."

We sat quietly and listened . . . nothing but woodpeckers and one squirrel jumping in the tree tops.

Once again we heard the cackling. We watched as the flock came toward the swamp. Boy, they were high. The ducks on the water were quiet, so we decided to stay quiet, too. Our decoys looked natural, we thought.

We waited. The flock was mighty high. In a great circle they passed over the swamp several times.

We kept waiting for them to come down. They kept looking things over.

"They're getting lower," Rupert said.

We watched, motionless. Sure enough, they were getting lower.

"They're low enough!" Bob said.

"Not yet," I replied. "Wait until they are plenty close. This may be your last chance for today."

As they passed the eastern edge of the swamp, they swooped low and went out of sight. We thought they were down, but then they were circling again!

"They're coming this way!" I said. "Keep still until we're ready to shoot." The ducks turned short and circled again.

It never fails, I thought. They can really stir you up when they start that circling . . . around and around, closer and closer. It's really exciting.

This time they were at tree-top height and headed toward us again. Closer and closer they came. Apparently they suspected nothing. I could tell it was a mixed flock, mostly mallards, but with a few black ducks.

Still closer they came. We were motionless against the big trees. We could hear that odd little call that the males make and the chattering of the flock.

As they passed overhead we all stood up. The noise sounded like the roar of a cannon. The ducks started gaining altitude fast. We emptied our guns. Ducks were falling all around us. This time we got mallards and blacks.

We pulled our decoys and started our long walk back to the car. All the way back we laid plans for return trips.

My nephews were planning in such minute detail. No obstacle would be too big to keep them away.

I couldn't help but smile as I walked along. The waterfowl bug had bitten these fellows and I knew they were headed for a lifetime of autumn restlessness and thrills.

A drake mallard is a real trophy anywhere. The author looks over his prize that splashed dead among the decoys.

A successful day by mid-morning. It doesn't happen every day, even in remote swamps, but your chances are pretty good.

Duane Raver

Preservation of Deer Trophies

MANY fine trophies—potential eye-catching wall ornaments, ideal conversation pieces, as well as perpetual reminders of the thrill of the hunt—rot into oblivion simply because many sportsmen are unaware of how easy it is to actually save a deer head for mounting by a professional taxidermist.

The West Virginia Department of Natural Resources' Division of Game and Fish recommends the following procedure: make a cut through the hide along the top of the neck from the shoulder to about three inches from the midpoint between the base of the antlers.

Next, continue this cut up to and around each antler. This will leave a V-shaped flap of skin over the skull.

Cut the ears back from the skull, making sure to cut as close to the bone as possible.

Then, make an encircling cut around the base of the neck **at the shoulder.** Many hunters make this cut too far up the neck, making it very difficult for the taxidermist to mount the head because of the short mantle.

Now, pull the skin off the neck and over the head, cutting carefully around the eyes.

Leave all the lips attached to the mantle and do not remove the cartilage in the nose.

Next, saw off the antlers with a portion of the skull attached. Clean off **all fat** and **flesh,** salt liberally, and ship to the taxidermist.

If the trophy can be delivered to the taxidermist immediately, case skin the neck (making an encircling cut at the base of the neck at the shoulders) up to the base of the skull. Then, sever the neck muscles at the base of the head and twist the head free from the neck vertebrace. The entire head, with antlers attached, and the mantle can then be turned over to the taxidermist for his immediate attention.

Deer skin can be tanned to beautiful leather that can then be tailored into distinctive jackets, coats, gloves and hats.

To skin a deer, the West Virginia Department of Natural Resources' Division of Game and Fish recommends the following method:

First, make cuts along the inside of each leg from the first joint to the mid-belly line;

Next, make an encircling cut around each leg at the first joint, and pull the hide off each extremity;

The remaining skin can be peeled off the body without the use of a knife, by pulling with one hand and using the fist of the other to force the hide free from the carcass.

Now the hide can be **thoroughly scraped of all flesh, fat and tissue.** All blood stains should be wiped off and then sprayed with cold or luke-warm water.

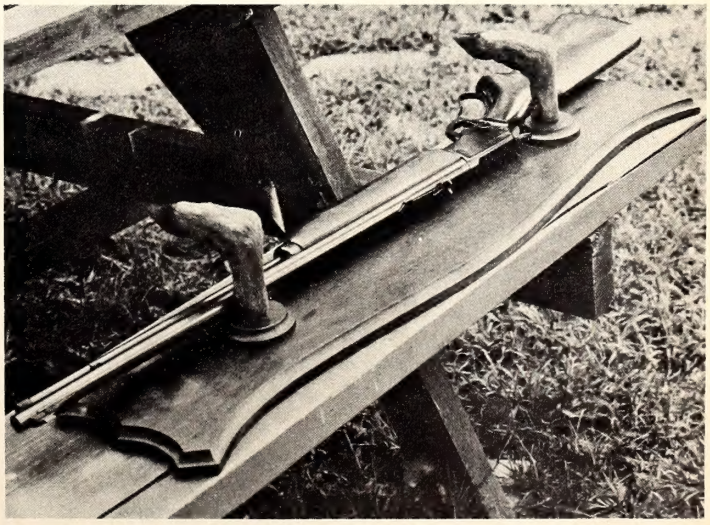
If possible, the cleaned skin should then be tacked flat (but not stretched) to the side of a building in the shade and protected from the rain.

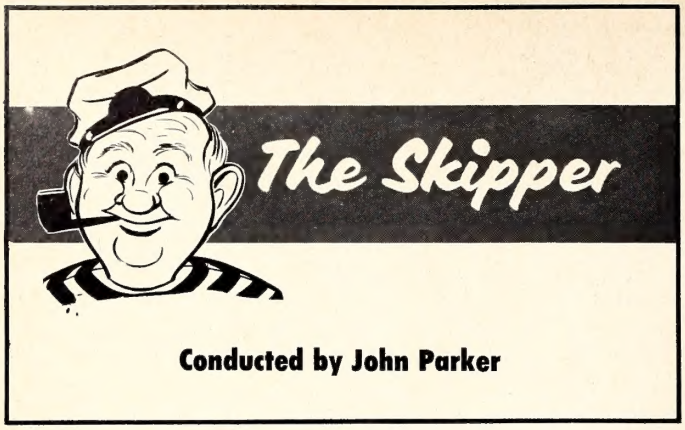
The flattened hide should next be well salted and permitted to dry. Later it can be removed from the wall and rolled up—**not** folded, as it might crack.

The dried skin is now ready to be sent to a professional tanner. However, if the hide can be shipped immediately, some tanners actually recommend a different procedure:

Instead of scraping the skin, leave the fat and flesh on it to help keep the hide soft. Then rub about two pounds of salt on the flesh side. Next, fold the edges to the middle, roll up, hair out, and place the hide in a burlap bag or cardboard box for immediate shipment.

Even the skilled taxidermist must have something to work with. If you expect your trophy to look like this (above), take care in skinning. Deer front feet made this attractive gun rack.





Conducted by John Parker

IF there is any one major piece of equipment that boaters occasionally neglect more than others, it is probably the boat trailer. Many of you have seen a gleaming runabout setting atop an unkempt trailer. Maybe the trailer looked as if it had been used as part of an artificial reef. Such a rig might run indefinitely but chances are it will present its owner with a boat load of trouble when he least expects it.

The average boat trailer is a fairly simple device but even so it can develop a malfunction and leave the boater stranded along a highway with a lot of boat and no water. Reputable trailer manufacturers build their trailers and associated equipment in accordance with specifications set by the Outboard Boating Club of America, the Society of Automotive Engineers, etc., plus their own good judgment and experience. A boater then, can reasonably assume that if he has purchased a trailer which fits his boat, that he will receive years of service from it. That is, if he periodically performs a little preventative maintenance.

Chipped paint, dry wheel bearings, worn rollers and bent axles are a few of the things that can happen to the boat trailer. If the latter of those mentioned happens to your boat trailer, you may be able to remedy the situation sufficiently enough to limp home. Here is an example: Due to what can only be termed careless backing, I put a kink in a trailer axle that made the rig just a bit pigeon-toed. In fact, I could have plowed my garden with that sad-looking trailer. I was about to leave the whole rig setting by the river when it suddenly dawned on me that the culprit, a stump, that put me in the ridiculous position might get me out of it. You guessed it, I simply lifted the trailer over the stump, positioned the axle just so and pulled forward about six inches. I never even had to have the trailer realigned.

Boat trailers do receive some unusual damage and such things as a bent axle or frame, or a fender that has shaken loose and needs welding may have to be handled by a professional repairman. However, most of the items, some of which we mentioned above, can be repaired or prevented by you.

November may seem to be an unusual time to mention trailer repair, but doing it now will eliminate all but a final check when the fast pace starts again next spring. Also if you are planning to use your boat and trailer throughout the fall season it may need a boost after all that summer hauling. For example, it is recommended that wheel bearings be repacked after 2500 miles. That's a lot of hauling but a lot of boaters do that much and more.

One need not be a mechanic to grease and examine wheel bearings. It is important, of course, to put everything back where it came from, to use a proper weight of grease and to tighten the bearing nut the right amount. Normally the nut should be tightened to a point where there is a slight binding when the wheel is turned and then back-off about a quarter of a turn. Periodic inspection may be even safer than the mileage guide. Certainly take action if a grease seal fails and there is a grease loss.

Trailer tires usually give good service unless wheels are out-of-line, or if the trailer is overloaded. Don't push your luck with worn tires. Also don't forget that a spare tire for your trailer is almost as important as the one for your car. If a tire appears to be wearing one-sided, best take the rig to a wheel alignment shop and have the repairman put some topnotch auto experience on your trailer.

Maintaining tire inflation at recommended air pressure is a cheap way to prevent trouble and costly wear.

Even the best of trailers receiving the best of care will eventually show signs of rust. Some paint jobs are better than others. On the better ones, rust may start from a chipped place in the paint where in the poorer ones it may just pop out and spread like poison ivy. And just like ivy, you must catch rust before it has gone too far. A can of spray paint to match and some sand paper will usually do. If the rust has reached a point where the metal surface is pitted, then a wire brush and a can of the rust-covering paint such as Rustoleum may be required.

The all-important boat trailer rates better treatment than most of us give it. Take time to keep your trailer in shape.

It does your pocketbook or your feelings little good to **think** that your trailer lights were burning if someone slams into the back of what is more than likely an uninsured boat and trailer. Lights and turning signals are not required on all trailers. Reflectors are the only such requirement on trailers licensed for 2500 pounds or less. Lights are recommended and if you have them, check them periodically. A good policy is to get someone to help you in checking the brake lights on car and trailer.

Trailer light malfunction may be caused by one of several things but you might start searching by checking the obvious, the bulb. Loose electrical couplings and bare insulation are two problem areas which may take a little more time to discover. However, once the trouble is located, a little tape may solve the problem.

Rusty or corroded lamp sockets can turn the simple operation of replacing a tail lamp into a grueling task. A thin coating of grease in and around the sockets and on the base of the new lamp will prevent this problem.

Worn or stiff working rollers can make loading and unloading more difficult and can also cause the bottom finish to be marred. Worn rollers are not too expensive to replace

• **Continued on page 20**

Six Months of Wing Shooting

By
Bodie McDowell
Photos by the Author

IT takes some planning to make a successful hunting or fishing trip. As an old sportsman once said to me, "You've got to be smarter than the fish you're trying to catch or the animal you're hunting to do any good."

But when it comes to hunting, you can cut down in this planning by simply hiring a guide who has the dogs and equipment you'll need. To boil it down to bird hunting, you can simply make an appointment at a licensed shooting preserve. (Editor's note: Controlled Shooting Preserve Rules are available through the Wildlife Commission upon request) These preserves offer sporty wingshooting six months of the year on a "your wallet is your limit" basis. This is to say that you simply pay for the birds you kill during the hunt. Some experienced bird hunters refer to this type hunting as akin "to catching fish from a barrel" or "shooting birds in a cage." The successful hunting preserve operator guards against this by having well-conditioned birds that fly like native birds.

Preserves for the most part offer quail, chukar, and pheasant shooting in the field, and many have duck blinds for shooting fast flying ducks at least three strains removed from the wild.

Doug Pryne (left) and Murphy Holloway get set in a well-designed duck blind. The high back prevents shooters from firing toward the lake as the ducks sail toward the water.

Birds generally are stocked on the morning of a shoot. In the case of quail, chukar, or pheasant, they are placed in good cover to make for good hunting and to make hunting these birds as near to hunting native birds as possible.

In many areas, the hunters working behind a brace of fine pointers for quail are sometimes rewarded with the point of a native covey, making for an even better day than the hunter anticipated.

The successful shooting preserve raises its birds in pens away from human habitation. J. H. Wright and Irvin Parks operators of Parks and Wright Shooting Preserve near Asheboro, North Carolina, condition their quail in flight pens, then place them in a darkened holding pen for several days before putting them in the field.

"We've found that the bird prepared this way makes a better flying bird when the covey is flushed," Parks says. "If you take them straight from the flight pen to the field, they don't fly quite so well."

A bird fully conditioned before being placed in the field can provide just as sporty shooting and offer as much challenge as native birds. And it is to this end that preserve operators are always working.

Different preserves have different ways of charging the hunter. Some charge a flat fee, guaranteeing the hunter that he will take home 10 to 12 birds. Some charge for the number put out for each hunter, and still others work on a membership basis whereby the hunter pays so much per season for a predetermined number of hunts and birds.

Duck shooting is similar to pass shooting, in that they will come zooming overhead at about 60 miles per hour. Adm. Richard E. Hawes, USN (Ret.), operator of the Briar Creek Hunting Lodge near Thomson, Georgia, handicaps his shooters by having them face the sun for the morning duck shoot.

His blinds are so constructed that a hunter must shoot the duck as it comes to him, or is indirectly overhead. He can't turn to shoot at the duck as it heads for a nearby pond where it will stay all day.

Preserve operators furnish dogs and guides and many have overnight accommodations for those who wish to spend several days at a preserve. Hunters are charged extra for food and lodging in these instances.

G. M. Holmes of Asheboro, N. C. (left), and J. H. Wright move in behind pointer "Back". An instant later the covey flushed. Most hunting preserve birds are strong, well-conditioned fliers.

You'll get all the thrill from preserve hunting that you got from the fields you used to hunt before the "No Trespassing" signs went up. You're even likely to forget that you are on a shooting preserve.

Once you've tried it, you'll probably go back for more.

It's hard to tell which is more pleased, hunter J. H. Wright, or pointer "Back." Both enjoy the thrills of quail shooting.

CONTROLLED SHOOTING PRESERVES LICENSED FOR THE 1963-64 HUNTING SEASON

*Not open to the general public

Paul Long's Shooting Preserve
Paul Long, Box 46
Route 1, Maiden

Collier's Shooting Preserve
C. K. Collier
Route 1, Linden

Linville Wildlife Preserve*
Karl M. Linville
Route 3, Kernersville

Quail Hatchery Shooting Preserve
Paul R. Harmon
Route 5, Statesville

Pine Lake Shooting Preserve
Paul Russell
Box 595, Troy

Pinehurst Hunting Preserve
James W. Tufts
Manager—J. Franklin Swaim
Pinehurst

Parks and Wright Shooting Preserve
Ervin Parks, Hoyt Wright
Route 5, Asheboro
Phone—FArmer 2196

Pleasant Grove Shooting Preserve*
H. G. Ilderton
701 S. Main Street, High Point
Manager—Graham Chilton
Route 1, Bennett

Voncannon's Shooting Preserve
Nolan K. Voncannon
Route 1, Box 418, Asheboro
Phone—MAin 5-7499

Kelly Hunting Preserve
Walter C. Kelly
Route 3, Box 105, Rockingham
Phone—TW 5-5834

Jones Brothers Game Farm
Ernest H. Jones, James L. Jones
Route 6, Reidsville
Phone—DIckens 9-8513

INDIVIDUALS WHO HAVE INDICATED THAT THEY WISH TO OPERATE LICENSED SHOOTING PRESERVES FOR THE 1964-65 SEASON

Mr. J. W. Dossett, President
Carolina Quail Shooting Preserve
Box 1281
Durham, North Carolina

Mr. Ray W. Crouse
Crousedales Farm
Route 2, Box 389
Lexington, North Carolina

Mr. Ernest H. Jones
Jones Brothers Game Bird Farm
Route 6
Reidsville, North Carolina

Mr. James F. Allen, Secretary
Stoneycreek Hunting Club
818 Lawsonville Avenue
Reidsville, North Carolina

The Skipper

• **Continued from page 18**

and certainly stiff rollers are no problem to lubricate. Rollers, cradles and bunkers, upon which your boat rests should be kept in good repair and adjusted to provide proper hull support.

Not all trailer suspension systems have grease fittings, but those that do should be greased as required. Springs too, should be checked for rust, as prolonged rust can weaken this part of the trailer which receives a lot of punishment.

The trailer hitch, ball, safety chain, and trailer coupling will require little if any maintenance. However, a seasonal check in this area to be certain that all nuts are tight will insure that your trailer will follow you. The coupling mechanism, be it screw down or lever actuated will work smoother if grease is applied. The ball, also, could be oiled thus reducing friction and wear. As for the safety chain, be sure that you have not sprung open any links due to overstressing the chain. This could happen if the chain becomes tangled and shortened at the time of backing and sharp turning.

Tie downs can become worn and the buckles may become rusted or jammed making for difficult utilization. A few minutes in straightening a buckle or in otherwise mending the tie down may prevent your boat from bouncing off the trailer.

If your winch line is of steel cable then all that may be needed is an additional coating of grease. If, however, you have used a rope winch for a few seasons you may wish to replace it with a cable. Also check the winch for proper working. The safety catch or ratchet and gears require periodic greasing.

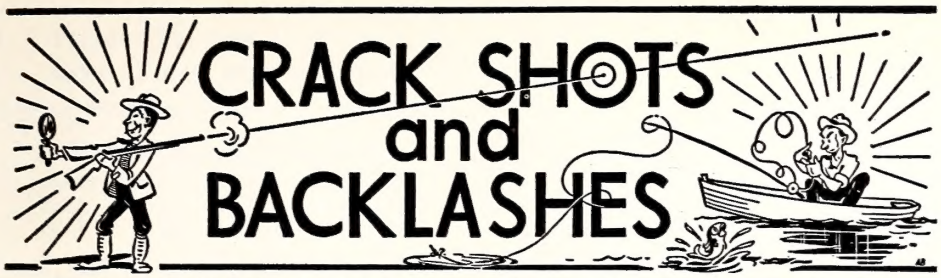
If your trailer has more elaborate equipment than mentioned such as electrical winch, brakes, etc., it will take longer for a thorough check but it is worth the time.

Your boat is not going to be part of the winter fleet? Then the trailer is in for a long winter's rest, but there are still some things to do.

Salt water lying around a wheel bearing all winter is reason enough to require replacement by spring. Performing the checks that have already been mentioned will remove all doubt of spring trailer repair bills. In fact, it would be advisable to check the trailer over completely even if it is going to be stored. Hose the trailer down to remove salt and road spray. Make repairs, touch up the rusty spots and go over the entire trailer with an oily cloth. This will reduce the rust problem. It would be best to store the entire works under a shelter but a good cover will help greatly.

One authority suggests that wheels be taken off and placed under cover to give tires a well-deserved rest. Also the winch, especially the more elaborate types, should be covered or taken off and stored, perhaps in the boat.

Putting the trailer on blocks will no doubt give the tires the needed rest. Besides being easier you may get the urge to head for the water if a December cold front is followed by a warm, balmy day.



DEPARTMENT OF LETTERS TO THE EDITORS, FIELD NOTES, AND ITEMS OF INTEREST

Conducted by Rod Amundson

THE following was written by John Madson of Olin Mathieson's Conservation Department, and is entitled "Game, Gardens, and the Hunters Who Don't." It should perk up our thinking on the harvest aspect of game management.

One of the most tradeworn clinches in game management is the comparison of a game population with a row of carrots.

But while many game managers wince at this threadbare old analogy, they're hard put to illustrate certain situations in clearer terms.

Both carrots and game are crops of the earth. Both may be harvested without detriment to the species so long as seed stock is maintained and the seed has fertile habitat. Both carrots and game benefit by being thinned, uncrowded and having lebensraum. *There is nothing to be gained by overcrowding either carrots or deer; in either case, excessive numbers can result in inferior crops and depletion of the habitat's vigor.*

This is common knowledge to game managers, but countless sportsmen cling doggedly to the conviction that a limited land area should support unlimited game crops. The same people are the first to thin a row of garden carrots, but scream like snowblind beaver trappers when a doe season is suggested or a game refuge opened to hunting. They seem determined to penalize themselves, wildlife population dynamics notwithstanding. "Population dynamics" is just an uptown way of saying that game herds are not static. They are subject to constant change and may increase beyond the range's ability to support them. Beyond this point the population will crash, and the loss is shared by game species, the hunter and the sorely-abused habitat.

There is, then, a basic difference between a game crop and a carrot crop. Both become stunted and inferior from overcrowding, but the carrots are unable to demolish their habitat by sheer weight of numbers, and the loss of a carrot crop will not retard or cripple a long-range program in which continuity of action is vital to both crop and consumer.

It has been observed, with considerable logic, that game should not be regarded as a harvestable crop because, unlike agrarian crops, its production cannot be controlled. This is partly true, but the stronger truth is that modern game production can be controlled to a high degree.

More is known each year of the habitat needs and limitations of game. More is being done to meet those requirements and produce consistent game supplies. Production also is controlled by carefully controlling the harvest and tailoring game populations to the economic and physical capacities of the land to support them. This is true of all major American game species—even waterfowl, which have notoriously shaky production. And while we are doing little to stabilize actual duck production at a high level, we are doing what we can to stabilize harvest—an important element of management.

There are few species of American game that could not tolerate additional thinning. Within their main ranges, there is a broad national underharvest of all species of deer, elk, pheasant, quail, wild turkey, doves, squirrels, bear, rabbits, all species of grouse, and probably even mountain goats, bighorn sheep, antelope, and bison.

Within the past year we have personally seen bison range on which a man could walk for a mile and never step off a "buffalo chip," northern forests so manicured by whitetails that they resembled city parks, huge mule deer bucks that will die of old age or winter, sage grouse and blue grouse and wild turkey that will never hear a shotgun, and bull elk ignored by hunters and fated to die of narcotic stomatitis in congested feedlots.

Not so with suburban carrots, which are thinned, cultivated and harvested with diligent husbandry.

Better it should happen to elk.

Be a Pollution Detective

Several months back, Sports Afield magazine ran an article by Michael Hudoba, well-known outdoor writer, entitled *Be a Pollution Detective*. The article pointed out that those in the business of combating pollution are making progress but they cannot be everywhere at once. The article goes on to tell how the fisherman or anyone who reaps the benefits of clean water (and this includes all North Carolinians) can join in. Many fish kills are first reported by fishermen or boaters but not enough are reported in time to do much good. If you want to learn more about the timely detecting and reporting of fish kills, write today to the Wildlife Resources Commission for this story reprinted by the U. S. Public Health Service.

Flying Mare?

DEAR SIRS: In "Crackshots and Backlashes" in the June issue of Wildlife **there is published a letter from J. C. Downing of Fayetteville in which he refers to a bird called "the flying colt."**

The following quotation comes from Birds of North Carolina **by T. Gilbert Pearson, C. S. Brimley, and H. H. Brimley concerning the upland plover** (Bartramia longicouda)**; "on June 11, 1898, Pearson for several minutes watched six in an open pinewoods area between Southport and Lockwood's Folly. A man he encountered said the correct name of the bird was 'Wild Mare' or 'Flying Colt,' because it whinnied when it flew overhead." GLENN A. WALLACE, STANLEY**

Right-of-Way Underway Right Away

DEAR SIR: There is possibly no tabulation available on the number of miles of power transmission line right-of-way cros-

KNOW YOUR PROTECTOR

Reuben M. Crumpton

Wildlife Patrolman Reuben M. Crumpton was born on December 27, 1932 in Rockingham County. He graduated from Cobb Memorial High School and attended North Carolina State College. Crumpton served four years with the U. S. Air Force as a Radar Operator in Tripoli and Formosa.

After completing the Wildlife Protectors' Pre-Service Training School at the Institute of Government in Chapel Hill, Crumpton was employed as a Wildlife Protector in Carteret County in July, 1959. In April, 1962 Crumpton was promoted to Wildlife Patrolman. He has completed six in-service training schools at the Institute of Government in Chapel Hill.

Crumpton is a member of the National Rifle Association and the Southeastern Association of Game and Fish Commissioners. He is married to the former Doris Loye of Guilford County and they have two daughters. The Crumptons attend Parkview Baptist Church in Morehead City where they make their home.

DIVISION ENFORCEMENT RECORD FOR JULY, 1964

HUNTING & FISHING	
Persons checked	40,942
Total prosecutions	1,127
Total convictions	1,107
Total cases not guilty	7
Total cases nol prossed	11
Total cases dismissed	2
Total fines collected	3,640.45
Total costs collected	8,299.75
BOATING	
Boats checked	10,543
Total prosecutions	305
Total convictions	294
Total cases not guilty	7
Total cases nol prossed	4
Total fines collected	612.95
Total costs collected	2,393.95

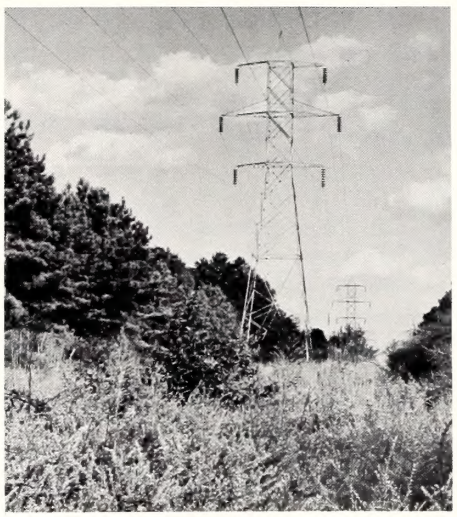
All fines and any arrest or witness fees are paid into the school funds of the counties in which the violations occurred, and no part of the fines or costs collected are paid to the North Carolina Wildlife Resources Commission or its personnel.

sing North Carolina woodlands, but personal observation leads me to believe that hundreds of miles of such land exists in eastern North Carolina.

It seems to me that such lands are potentially ideal areas for the food-cover environment necessary for wildlife propagation.

If woodland rights-of-way, seeded to shrub lespedeza and/or perennial Japanese soybean, or other food crops, can substantially increase game populations, why can't arrangements be made to put these areas into production? Perhaps the Wildlife Commission could monitor a pilot program to test the feasibility of such a plan. The power companies should have no objection, for maintenance of rights-of-ways should decrease if tree growth is discouraged. The owner of the land if other than a power company should welcome the increased production of wildlife for sport or insect control. The urbanite would have more productive hunting areas. The wildlife people are already providing free seeds for distribution to farmers. Why not take one step further and produce the game habitat themselves?

Sportsmen have long seemed to feel that farmers are somehow responsible for providing suitable food patches near cover to help provide them sport during the hunting season. Such a responsibility apparently must result from the farmers deep sense of stewardship or conservation or some other noble purpose. But unfortunately such is becoming less and less the case. The urban-dwelling hunters probably far outnumber their rural counterpart, and therefore should expect to participate in providing game as well as harvesting game.



If legislation is required to test this idea, let's legislate. But let's do something to help cure the number of hunting days when we see more hunters than birds. Is it worth a try? REX A. PHILLIPS, WILMINGTON.

It is pleasing to report that a program such as this is already under way. It involves cooperation among major power companies, farmers and sportsmen's groups. Although still in the experimental-development stage, we hope someday to have most of the rights-of-way developed for wildlife habitat. —Ed.

Bird Note

DEAR SIRS: I want you to know how much our family enjoys Wildlife Magazine. It is the only one we have received that the whole family takes an interest in. Our four year old son even gets excited at all the bird and animal pictures.

We feed birds in the winter, and raise our own sunflower seed for bird feeding. However, we have to buy other grain we use. We have eight feeders in our yard which were made by my husband.

This past spring we were delighted to have an evening grosbeak in our back yard. It is a beautiful bird; stayed with us two days and then continued on its way. In our bird book it says that it is unusual for a grosbeak to be in this part of the country.

Again, it is a pleasure to receive your magazine. MRS. J. D. LENTZ, TROUTMAN.

You're Welcome

DEAR SIRS: Hats off to you for settling a question that many of us in this section of North Carolina have been debating over for several months. Your map indicating the three different sections of our state, and where one ends and the other begins was certainly appreciated.

It's reassuring to know that there is a magazine that people can request certain information and raise questions and have them answered concerning our state or its resources.

Again, thank you and your staff for your continuing conscientious jobs. LAYTON GODWIN, COATS.

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• **Continued from page 10**

trolled burning on a three or four year rotation after the first thinning will increase production of browse for deer and leguminous plants such as beggar lice for quail.

Going back for a moment to initial conversion by disking of poor hardwood sites, the broadcast seeding of Korean lespedeza on such sites when the planting is done creates ideal quail feeding areas. Such seeding should of course be restricted to sections close to cover since the birds will not venture far from protection. This is our fifth recommendation.

Our sixth recommendation has to do with preservation of hardwoods wherever and whenever practicable. Whenever we attempt to force a single crop on all sites within a geographic region we are bound to get into trouble, and we see at least two trouble spots in the business of converting everything to pine.

First, we cannot blindly accept the universality of upland hardwood conversion. Surely there are upland sites which can remain in hardwood production with no serious loss in timber production potential. Where there is a demonstrably significant margin in productivity we may perhaps not be able to argue as effectively for preservation of oak trees. But even the most commercial minds, if concerned with long term trends and the increasing economic value of recreational hunting, cannot overlook the importance of preserving these important wildlife feeding areas. Indeed, they would do well to transfer their attention to increasing the hardwood productivity of such stands rather than concentrating on their conversion to pine. Some day, in the not too distant future, when income from hunting will match or exceed that from timber, they will be glad they did.

The second phase of hardwood management with which we are very seriously concerned are the bottomland and wetland hardwood sites. Research by the United States Forest Service clearly demonstrates that such sites are best adapted to production of hardwoods and that high quality hardwood production on such sites is much more profitable than conversion to pine.

On the basis of these findings by the most widely recognized authority on forest management in the world, it is difficult to understand why any organization should undertake to attempt conversion of these sites by drainage and planting to pine. In our opinion, no responsible organization would recommend such a practice, and those who would are doing the landowner a serious disservice.

The man who drains his hardwood wetlands loses twice, once in decreased timber production, and then again in elimination of extremely valuable wildlife range. Hardwood wetlands in eastern North Carolina constitute a major producing **and** wintering area for waterfowl. They provide sanctuary for big game, and they provide food for many forms of wildlife. The preservation and proper management of hardwood wetlands is therefore one of the most important and potentially one of the most profitable practices challenging owners of forest land in eastern North Carolina.

Conclusion

To summarize briefly, broad scale conversion of farm and forest land to production of pine will have the effect of reducing most species of game birds and animals. Depending on how we go about it, this conversion can virtually eliminate game populations or it can be done in such a way as to result in only modest reductions. In conclusion, we want to leave with you the thought that forest management for wildlife can be profitable even today, and that it will become increasingly more profitable in the years ahead.

Inside the Outdoors

OWLS are found throughout the world. The owl is a bird of prey and those found in North Carolina are chiefly nocturnal. Not all owls are nocturnal. Being active at night, feeding is at a time when more mice are to be found, and the owl's food consists largely of these destructive little rodents. However, other creatures are included in their diet—insects, (especially grasshopper), lizards, snakes, frogs, shrews, squirrels, rabbits, other mammals and birds are all on the bill-of-fare; but rodents, particularly mice, are predominant. It is true that birds of prey take some birds and mammals, but most often the weak, sick, or crippled creatures are the victims.

The owl captures his prey by striking with his powerful talons. If the prey is small enough, it is swallowed whole. The indigestible portions such as fur, bones, and feathers are formed into pellets in the stomach and are regurgitated. Pellets are clean, odorless, and entirely agreeable to handle, and when examined they give evidence of the bird's diet.

Found throughout the year and over much of the state, the screech owl is one of our most valuable birds to the farmer, forest and plants. It may be known as the little horned owl, gray owl, red owl, cat owl, or shivering owl. They are small, not weighing quite as much as a bobwhite quail. The maximum length is about 10 inches and the wingspread is about 22 inches.

An interesting and unusual feature is their color—two phases, gray and reddish. The fledglings of red and gray parents all may be reddish-brown, all may be grey, or some of them may be red and some may be gray.

The choice nesting place is hollows in trees. They will also use bird boxes if the holes are large enough. From 3 to 5 almost round white eggs are laid. The incubation period is from 21 to 25 days. There is usually one brood each year.

Far too little is known about the flesh-eating birds for their value to be appreciated. Additional information may be found in the following references:

BIRDS OF NORTH CAROLINA, by Pearson, Brimley, and Brimley, which may be purchased for $5 from the State Museum, Raleigh, North Carolina.

A FIELD GUIDE TO THE BIRDS, by Roger Tory Peterson, Houghton-Mifflin Company, Boston, Massachusetts.

LIFE HISTORIES OF NORTH AMERICAN BIRDS OF PREY, by Arthur Cleveland Bent, Dover Publications, Inc., 180 Varick Street, New York 14, New York.

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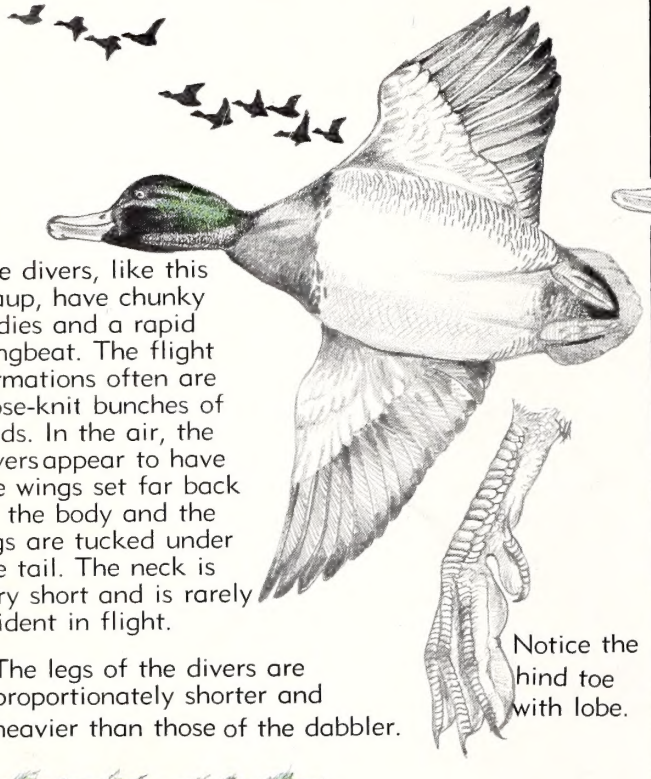
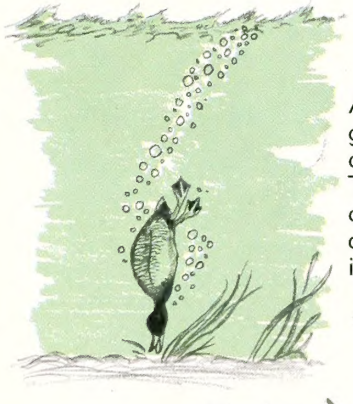
DIVING PUDDLE DUCKS



The divers, like this scaup, have chunky bodies and a rapid wingbeat. The flight formations often are close-knit bunches of birds. In the air, the divers appear to have the wings set far back on the body and the legs are tucked under the tail. The neck is very short and is rarely evident in flight.

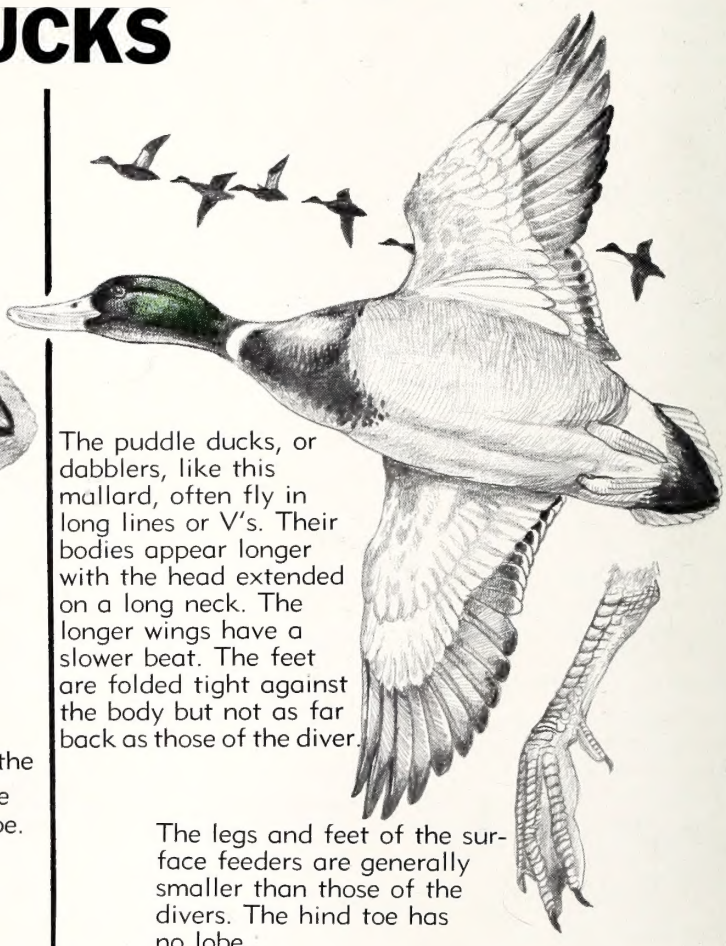
Notice the hind toe with lobe.

The legs of the divers are proportionately shorter and heavier than those of the dabbler.



Aquatic vegetation is gathered at great depths by the divers. They propell themselves down to the bottom and often swim about in search of food.

The big-footed divers get into the air with a running, horizontal takeoff.



The puddle ducks, or dabblers, like this mallard, often fly in long lines or V's. Their bodies appear longer with the head extended on a long neck. The longer wings have a slower beat. The feet are folded tight against the body but not as far back as those of the diver.

The legs and feet of the surface feeders are generally smaller than those of the divers. The hind toe has no lobe.

Food-gathering is restricted to water only a foot or two deep where the puddle ducks can "tip up."

The surface feeders jump into the air and rise swiftly on spread wings.

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Wildlife IN NORTH CAROLINA

DECEMBER, 1964

Jack Dermid

'Tis The Season....

Sparkling ice, glittering snow, crisp blue sky—all help Nature get ready for the Christmas season. Harsh cold and frozen ground may present wildlife with some winter hardships, but with a bit of help, it will survive. 'Tis the season to reflect on our bounty and blessings.

State of North Carolina

TERRY SANFORD
Governor

North Carolina
Wildlife Resources Commission

LEE L. POWERS, *Chm.* ..... Lake Lure
WALTER LAMBETH, JR., *V. Chm.* ..... Charlotte
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Wildlife in north carolina

The official publication of the NORTH CAROLINA WILDLIFE RESOURCES COMMISSION, Raleigh. A monthly magazine devoted to the protection and restoration of our wildlife resources and to the improvement of hunting and fishing in North Carolina.

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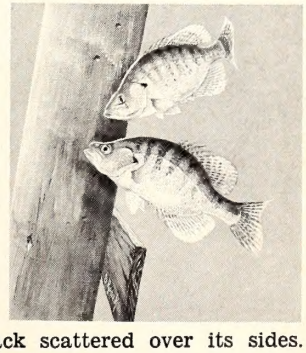
COVER



December weather may present some opportunities to do a little fishing, and if it does, one of your targets should be the crappie. Our cover shows two white crappies around an old piling in the still, green water of winter. Minnows are by far the best bait, but a small white jig often gets action too. The white crappie has five or six dorsal spines; the black, seven or eight. Color may be deceiving, but the white crappie generally is marked with vertical bars, while its cousin has blotches of black scattered over its sides. Painting by Duane Raver.

WILDLIFE IN NORTH CAROLINA recognizes the need for close cooperation between State and Federal conservation agencies and the people who hunt and fish—to bring about a restoration of our renewable resources. The Editor gratefully receives for publication news items, articles, and photographs dealing with the North Carolina out-of-doors, but reserves the right to reject materials submitted. Full credit is given for all materials published.

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COOPERATION: A Must in Wildlife Conservation

by Thad Cherry
Wildlife Biologist

This group of men represents State and Federal agencies ready to cooperate on a deer census.

THERE was an expression of of both pride and anxious anticipation upon the face of each of the two hunters as they slowly moved ahead of their pointing dogs. Bo, the pointer, and Bess, the setter were also wearing expressions of solemn anticipation as they stood locked in position, nearly hidden by the dense growth of sericea lespedeza.

The covey burst, and quail scattered in all directions. With six fast shots, four birds plummeted earthward. Both dogs bounded forward upon the command, "Fetch here," and in a few seconds the hunters were praising their dogs and examining their birds.

Suppose, just as the men realized that the dogs were pointing, the dogs had leaped into the covey of quail. Needless to say, the next few moments would have been a frustrating experience for both the men and dogs. There is a slim chance that one of the dogs might have caught a quail, and there is also a slim chance that the hunters might have gotten a shot or two. But it is more likely that only the "objects" of the hunt would have benefited.

The two hunters probably could kill a few birds without their dogs, but that would certainly be a haphazard way to hunt quail. A well-trained dog also realizes that the hunter can do a better job of bringing down quail than he himself can do. The coordinated effort of a bird hunter and his dog is a classic example of cooperation. The well-trained dog cannot be surpassed by the hunter at locating birds, while at the same time, the experienced hunter cannot be surpassed by the dog at bagging quail. Each can do his job well, but each realizes his dependency upon the other for attainment of the overall goal. As a team, they can be the ultimate in efficiency.

COOPERATION is an absolute "must" in any team effort and Wildlife conservation can succeed only as a team effort. Our wildlife resources are directly dependent upon the efforts of all agencies actively participating in conservation practices involving any of our natural resources. Thus, the extent to which inter-agency cooperation and communication is practiced can determine the extent to which wildlife is benefited. Let us look at a few of the many ways in which inter-agency cooperation is benefiting wildlife:

The U. S. Public Health Service recently began a project aimed at the elimination of salt-marsh mosquito breeding grounds. It is a known fact that periodic flooding of salt marshes triggers the hatching of millions of mosquito eggs laid on the exposed soil immediately after the last high water. The obvious solution seemed to be the use of drainage ditches, which would prevent the periodic flooding of the marsh areas. Plans were made to procede with this drainage program.

Before the canals were begun, the plans were studied by an alert Wildlife Resources Commission waterfowl biologist, who immediately saw a great potential for waterfowl management in a program for mosquito control. The biologist submitted his suggestions, which were accepted and incorporated into the plans (see "More Duck Hunting," No-

vember, 1964, *Wildlife*).

Instead of being criss-crossed by canals, the marsh area was completely enclosed by dikes. Huge pumps were installed, and, after the undesirable vegetation was burned off, the area was flooded with water. Quality duck food began to grow, and now over 500 acres of choice duck habitat have been added to our coastline. At the same time, the constant, controlled water level has virtually stopped mosquito reproduction in that area.

ANOTHER example of cooperation: we are all familiar with the thousands of miles of powerline and utility rights-of-way which are either grown up in undesirable vegetation, or lie bare and eroded. In either case, they are an eyesore to the public, a headache to the maintenance crews, and virtually useless to wildlife. Every few years these rights-of-way are usually either poisoned, pushed off by bull dozers, or are bogged and left to erode or to grow up again.

In the fall of 1962, the Wildlife Resources Commission, the Davie Electric Membership Corporation, and the landowners along the right-of-way set up an experimental cooperative planting project. The Davie Electric Membership Corporation provided the fertilizer and prepared the right-of-way for planting. The Wildlife Resources Commission provided the planting materials and technical advice. The landowners did the actual planting. Currently, other pilot planting projects are being started throughout the state in cooperation with major power companies.

Here, Duke Power Company has helped provide a fishing and boating access area.

Properly planted rights-of-way provide choice wildlife food and cover, prevent soil erosion, restrict growth of undesirable vegetation, reduce maintenance costs, and appearance. Periodic mowing is necessary for maintenance, and benefits the wildlife food and cover.

MANY landowners and sportsmen are familiar with the annual distribution of wildlife food and cover planting materials for wildlife habitat improvement. Many agencies cooperate with the Wildlife Resources Commission in the distribution of these planting materials. Soil Conservation Service personnel frequently include the use of wildlife planting materials in their farm planning work. Agricultural Extension Agents stress the importance of wildlife and habitat improvement with 4-H groups and others. Vocational Agriculture teachers instruct their classes in the proper use of wildlife planting materials, and supervise their students in making wildlife habitat improvements on their farms.

Were it not for interagency cooperation, we surely would not be blessed with the abundance of wildlife we have today. In fact, wildlife management plans have even been incorporated into many projects which m i g h t have otherwise adversely affected wildlife.

And yet today we have still not attained the amount of cooperation necessary if we are to leave any wildlife for the future generations. We must be certain not to allow our God-given wildlife resources to be annihilated in the name of progress. With planning and cooperation we can combine wildlife management with progress. Just as the hunters and their dogs form an efficient, cooperative team, each of us has his part and obligation in the teamwork of wildlife conservation. *See also "Coordination of Conservation Programs" by Ira Gabrielson, September, 1964, *Wildlife*.

The responsibility of teaching tomorrow's citizens is often shared by various natural resource agencies. Here, a State Forester tells youngsters about forest fires.

School for Fishermen

by Motte Griffith

Tackle representative Noon Hudson demonstrates which knot to tie. Below, Dr. W. W. Hassler discusses the internal workings of a bass with his interested students.

THERE is a long-standing joke among anglers that the fish are smarter than the fishermen.

For a number of years, North Carolina State has been attempting to reverse this balance of power in order to give the fishermen a better break when he drops his hook in the water.

For the past 13 years North Carolina State has been offering, as a part of its regular short course and conference program, a Short Course in Sport Fishing.

In other words, fishermen are given the opportunity to at least find out how to break even with their finny competitors of the deep.

The course, which is a comprehensive look at all the angles of angling—sport, conservative and educational features, came into being in September of 1952 after almost a year of planning and study.

It has been assisting fishermen to get the most out of their fishing for the past 13 years. The 1965 edition of the course will be staged at Hatteras on North Carolina's famed Outer Banks.

This will mark the fourth year at Hatteras. The course has had successful runs of five years each at Morehead City and Nags Head. Each time there was a change of locales, it was to improve the course.

Edward W. Ruggles, long-time director of the Division of General Extension at State, conceived the idea of such a course in 1950. He spent nearly a year working out details and finally took his problems to the Sport Fishing Institute in Washington, D. C.

The late Dr. R. W. Eschmeyer, who was director of the institute in the early 1950's, was the man who finally put the course outline in black and white.

"The course which Eschmeyer initially outlined," says Gene

Starnes, assistant director at General Extension, "is essentially the course we use now. Of course, there have been some changes, but the original concept given us by Eschmeyer is still utilized."

THE initial years were rather tough for the course, according to Starnes, who handles about half of the division's 100 short courses conducted annually.

"We tried to expand in 1954 and 1955 with the addition of a fresh water school at Fontana," he said. "It just didn't go over as well as the course we offered on the coast. After two years we closed it down for lack of interest."

After starting out slowly in Morehead City, attendance at the once-a-year course began to improve.

"The word began to get around that we had something to offer and by the time we'd moved our operations to Nags Head we had classes which approached a hundred," Starnes said.

The assistant director points out that enrollment is now scaled to between 70 and 75 students.

"Of course," he said, "we are limited somewhat by the facilities available."

In all there have been about 800 students who have managed to successfully complete the course of study for the program. "Honestly," said Starnes, "I've heard only one person say they were d i s s a t i s f i e d with the course."

The instructional staff and the course content have a lot to do with the success or failure of any course of this type. And the Sport Fishing Short Course has had some of the best of both.

For the first 10 years of the courses, Dr. Fred Barkalow, then head of the Department of Zoology, was in charge of the instructional program.

Presently Dr. W. W. Hassler of the University's Zoology Department and a well-known researcher in the field of sport fisheries is heading the program.

Starnes points out that instructors for the course have come from the faculty at State, the Agricultural Extension Services, Sport Fishing Institute and the N. C. Wildlife Resources Commission.

"We would like to give special mention to the various representatives of fishing tackle companies who have given their time freely as instructors at the school," Starnes said.

Another who rates a special note, according to Starnes, is Hal Lyman of Boston, publisher of "Salt Water Fisherman."

"Lyman has attended all but two or three of the courses, and has been invaluable as an instructor and promoter," Starnes said. Lyman is a recognized authority in the area of surf casting, as is Claude Rogers of Virginia, who is also a member of the instructional staff.

Rogers, who has long been known as one of the top channel bass fishermen in the world, has been on the staff of the school for the past several years. He is director of the Salt Water Sport Fishing Association of Virginia.

The course, as it is taught over a six-day period, is geared to the actual sport of fishing, conservation of the natural resource and education in the area of marine biology.

Topics such as these are a part of each course:

—"Big Game Sport Fish"—Dr. Hassler.

—"Oceanography and Fishing"—Hugh Fields of the Agricultural Extension Service.

—"Introduction to Tackle"—taught by a tackle representative.

—"Lures to Catch Fish and Fishermen"—Hal Lyman.

—"Surf Fishing Tips"—Claude Rogers.

—"Artificial Lakes and the Sportsman"—Dr. Eugene Hester, Bureau of Sport Fisheries and Wildlife, U. S. Department of Interior.

These and other topics are spread out over the six-day period with a liberal sprinkling of fishing trips, practice casting sessions and surf fishing.

STUDENTS check in on Sunday with the initial class set for Sunday night. This includes an introduction to the course as well as a look at the weather and its affects on fishing.

On Monday the students spend all day in class with lectures and demonstrations. Late in the afternoon the class is moved to the beach for a look at experts in the surf casting exhibitions.

Tuesday is one of the big days of the course. All the students shove off early in the morning for an all-day trip to the famed Gulf Stream which lies just offshore at Hatteras.

Course students have boated marlin (blue and white), dolphin, amberjack, tuna (yellow fin), mackerel (spanish and king) and a variety of other fish

The fishing school explores most all of the angling varieties available in the coastal area. Here, some instruction on surf fishing takes the spotlight. There's never a dull moment whether in the classroom or putting the teaching into practice.

during the day-long trip to the Stream.

Wednesday, the students spend half-a-day in class and the other half fishing the sound or the in-shore areas. The Thursday schedule is similar with a half-a-day in class and half-a-day fishing.

Fishing is the one thing that most of the students come to the course to get, but they also take away much of the other information which is presented.

"We can't, of course, guarantee the number or species of fish the students will catch," Starnes said. "But we have had over the years what I consider reasonable success.

"We want each and every student to catch as many or as big a fish as he wants, but that is a tall order. We don't go in for setting records, but we have experimented while fishing." Starnes said.

Starnes pointed out that in 13 years the school does have at least one record catch, although it was purely by accident and not design.

In 1959, while the course was located in Nags Head, a Sport Fishing Short Course student became the first angler to take a broad-bill sword fish on hook and line in North Carolina waters.

The feat was accomplished by Dan Hickey of Philadelphia. Since that time several swordfish have been taken in North Carolina waters.

ALTHOUGH he set no records, W. M. Osborne of Taylorsville probably experienced one of the most satisfying fishing experiences on record.

Osborne is from the hilly section of the state, and he had done his share of fresh water fishing. He had not, however, taken a trip off-shore in search of big game fish.

During the 1963 course, Osborne, an agricultural teacher from the mountains, hooked, played and boated a 345 pound blue marlin. It happens to be the largest fish ever taken by a student in the Sport Fishing Course.

It took Osborne nearly an hour and a broken rod to land the big fish. A mountain boy doesn't get a chance to do that every day.

The course is by no means a localized affair. Students have come from as far away as California and from most of the states east of the Mississippi River.

"We feel the course has been very beneficial to the State in other areas of the nation if for no other reason than the tourist and travel industry." Starnes said.

The assistant director said the Advertising Department of North Carolina's Conservation and Development Division has long plugged the courses as one of the state's offerings to the tourist and traveler.

"We don't claim that the presence of the course had anything to do with research in this particular area. However, there was no research to speak of in sport fisheries until just recently.

"Dr. Hassler is now carrying on extensive research with various sport fish in the Hatteras area," Starnes said.

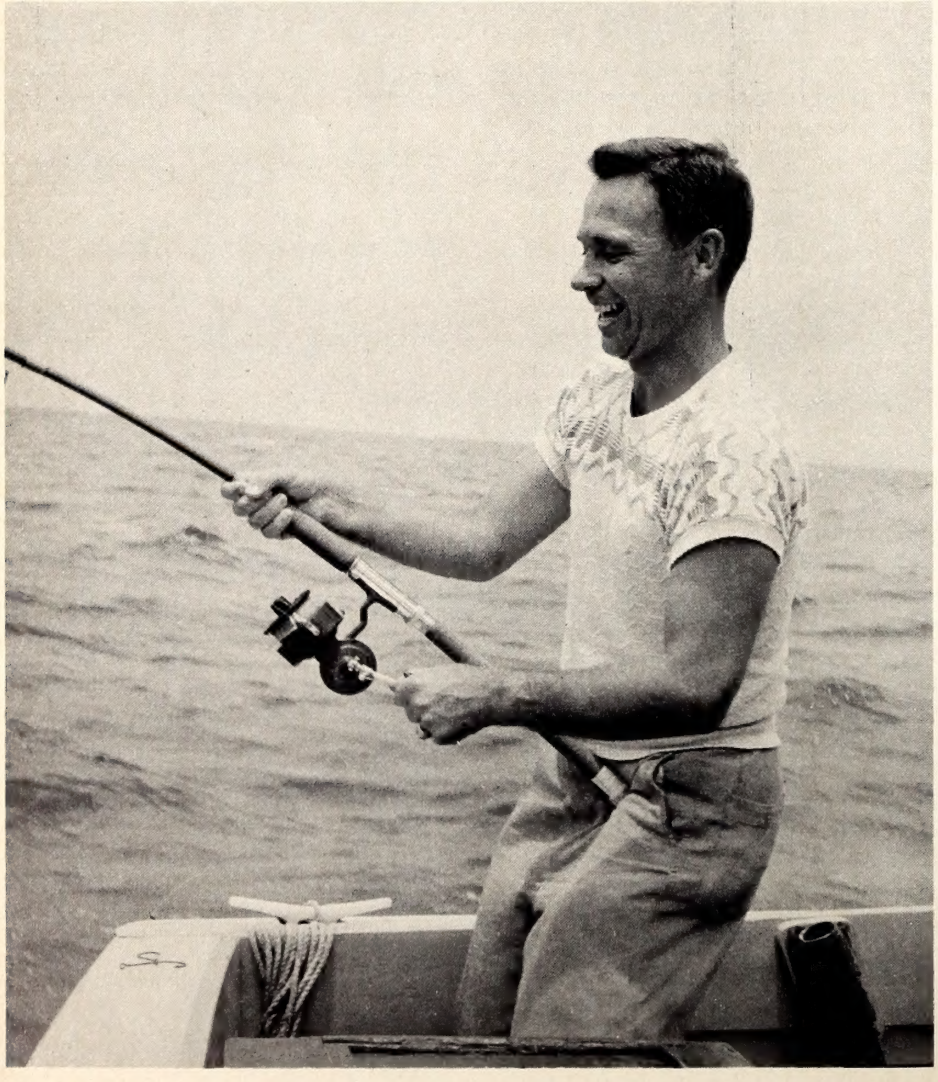
"We also like to feel that where this course has been we have tended to up-grade the sport fishing industry of the area," he said.

The 1965 course will return to Hatteras, says Starnes. The dates are June 13-18.

"We had a full house in 1964," he said, "we are expecting the same in 1965." Any person interested in trying their hand at learning fishing in the classroom can get additional information from the Division of General Extension, North Carolina State.

Starnes pointed out that the 1964 class didn't do so bad from the standpoint of bringing home the bacon, or rather fish. "There were 353 fish caught in one full and two half-days of fishing. That's better than average even for school kids."

And here's the payoff: a saltwater battler on light tackle. No student ever had a more enjoyable test!



Reasonable Effort

John R. Parker Jr.

EVERY sportsman should deplore and try to prevent the waste of game. Section 10. 14 of the Federal Regulations covering waterfowl, doves, etc., deals with the waste of game and it says in effect that hunters must make a reasonable effort to retrieve their kill. The section reads as follows: *"Wanton waste of migratory game birds.* No person shall kill or cripple any migratory game bird pursuant to this part without making a reasonable effort to retrieve the bird and include it in his daily bag limit."

Many hunters do not know about Section 10.14 in the Federal Regulations. Many do not know if there is a similar state regulation. Actually there is no such State law pertaining to deer, quail, etc., and perhaps there should be. However, State law does require that Federal Regulations pertaining to migratory game birds be adopted and enforced.

For many hunters there is no need for a 10.14. To them, to the sportsman, attempting to retrieve all game is just as automatic as flicking the safety off when the covey rises. There is never any question in their minds about killed or crippled game being retrieved. It will become part of the day's bag or at least they will try very hard to make the cripple count toward their legal limit.

Others upon learning of such a law may comment "ridiculous", "unfair", "unenforceable", or "that's carrying it too far." There is no question in their minds either concerning cripples. Their attitude is, "Why take the time to retrieve when there are still birds overhead to be shot?" They may carry this a bit further with the old alibi that a dead bird is a dead bird so what difference does it make whether it is retrieved or not. A rebuttal to this type of thinking would, in part, be somewhat philosophical and delves into the question of just what is waste. True, retrieving cripples will not help the poor people of France but many a sportsman has derived a lot of satisfaction from the simple act of retrieving all game that his gun brought down. This cannot be done on every hunt but it is something to strive for. That is what 10.14 is all about.

THERE is another important reason why the Federal Regulations insist that you and I try to retrieve all killed or crippled migratory game. The reason is tied in very closely with bag limits. The setting of seasons and limits, both in state and federal agencies, has become a complex business. Computors, field surveys, hunter success surveys, lie factors, mistake factors, etc., are all a part of the preseason business to determine how much game can be safely harvested during the forthcoming season. In other words, when it is finally decided that the nation's hunters can safely bag 12 doves a day, this does not mean that we can safely leave 12 lying in the brush and also take 12 home on each of the days in a long season.

Here is another example of the above situation. If 5000 North Carolina duck hunters bag two limits each of canvasback this year, there will simply be 5000 happy duck hunters. But if this same 5000 hunters bagged two limits each *plus* that many left drifting in the sound, then we might have to wait another four years before shooting canvasback again.

The above figures need not be accurate, they probably are not. Mathematics is only indirectly important to this subject. The important thing is the hunter's attitude toward the laws that are made for his benefit.

WHAT is a reasonable effort? I have a friend who quite a few years ago returned to the site of a downed dove long after sunset. He continued the search with flashlight and machete. I believe my friend had two reasons for making this effort. First, he probably did not intend to be beaten by a thick growth of reeds and briers. Secondly, I believe that he truly hated to waste one single bird. The bird was not wasted because as I recall his effort paid off.

The incident described above far surpasses the reasonable effort of which we speak. It could be called an unreasonable effort. Yet many is the time that a deer hunter has tracked a wounded buck for a half a day. When the tracking proves successful, we can be sure that there is one tired deer hunter and also that he is quite likely very satisfied with his own woodsmanship and sportsmanship.

By selecting a gunning stand more carefully the hunter can often reduce or eliminate the lost bird problem. For example, if doves are approaching him and most of his shots are the high, overhead type, he would not want a thicket to his back. If that squirrel in your sights is most likely to fall in the river, then best pass up the shot. The examples are many. The important thing is this: the hunter controls his gun and in many ways he can control the circumstances under which his game is bagged. Thus he reduces the chances of not finding the wounded duck, dove or whatever.

There is also a humane reason for making this reasonable effort and there is little we need to say about that. It speaks for itself.

What is reasonable for you may not be reasonable to someone else. It would be rather impractical to affix a certain amount of time in which we would look for the different species of game that have fallen to the gun. It is not always easy to turn one's eyes toward the thicket when there are birds overhead. It is easy to call off the birdless retriever and hurry on to another covey. However, the trials and difficulties of a day's hunt are an inherited part of being called a hunter, a sportsman. And until the man in the field lives up to these responsibilities he is neither a hunter nor a sportsman, but just a shooter.

What will be your reasonable effort?

PREDATION SHOULD BE ENCOURAGED

Reprinted from the
Maryland Conservationist

BIOLOGISTS, conservationists and ecologists have long decried the anti-predator attitude held by many sportsmen. Scientific studies showed conclusively that predation was necessary in maintaining healthy populations. However, many sportsmen, especially the old-timers, were not convinced, and many today still hold antiquarian views in this regard. So deep was the feeling against predators that new concepts had very little effect.

However, a recent report from the Southeastern Cooperative Wildlife Disease Study furnishes evidence that should change the thinking of even the most stubborn diehards. This report presents the findings from studies made of rabbit mortality in South Carolina, on grounds owned by the Indian Beagle Club.

The Indian Beagle Club is located eighteen miles southeast of Gaffney, in York County, South Carolina. Trial Grounds for the club consist of 25 to 30 acres of abandoned farm land that were enclosed by rabbit-proof fencing in December, 1961. Since that time numerous rabbits have been introduced onto this premise. This history of rabbit stocking for the past two years has been as follows: Summer, 1961—105 rabbits; December, 1961—193 rabbits; October 1962—24 rabbits (imported from Missouri); December, 1962—120 rabbits; September, 1963—50 rabbits, and November-December, 1963—50 rabbits. With exception of the 24 imported rabbits obtained from Missouri in October, 1962, all animals used for supplying the Indian Beagle Club Trial Grounds have been box-trapped from surrounding counties in western South Carolina.

Within these Trial Grounds, from three to five acres of wheat, oats and barley are planted for the rabbits, and during winter months sweet potato and corn supplements are supplied. In exceedingly dry weather artificial watering is necessary. Since construction of the enclosure, rigid predator control has been practiced, and very few foxes, hawks, or owls ever acquire access to the penned rabbits.

According to club records, sporadic rabbit mortality has occurred since the organization of the enclosure. Marked mortality commenced during the second week of December, 1963, however, at which time 15 dead rabbits were found. Deaths continued and in early January the South Carolina Wildlife Resources Department was notified of the alarming situation. On January 10, 1964, the Southeastern Cooperative Wildlife Disease Study initiated an investigation for determining the cause of mortality.

The initial phase of field studies involved a thorough search of the area, and by the evening of January 11, three, intact carcasses had been located. Although each of these rabbits was badly decomposed, salient gross lesions were recognizable and strongly suggestive of tularemia. Spleens and livers were collected from two subjects and returned to the laboratory for critical studies.

For sake of clarity in respect to future diagnosis, it should be emphasized that at this stage of the investigation decomposition of carcasses had rendered cultural procedures impractical. In other words, the field diagnosis of tularemia could be either confirmed or refuted, but with only limited and inadequate specimens available, further attempts in establishing the etiology of disease could not have progressed beyond negative findings relative to a single rabbit disease (tularemia).

Findings were not negative, however, and fluorescence inhibition (FI) tests performed directly on tissue impression smears afforded a strongly positive identification of **Pasteurella tularensis.** This phase of the investigation was supervised by Dr. John W. Foster, Associate Professor, Department of Microbiology and Preventive Medicine, School of Veterinary Medicine at the University of Georgia. Before the report of these findings, Dr. Foster checked and double checked all aspects of the techniques employed.

Of course, wherever aimals are perpetuated or kept in a manner that causes overcrowding, potentialities of disease are accentuated. When new stock is continually being introduced into such an environment, the likelihood of disease is further augmented. Where tularemia is specifically concerned, a paramount item of interest noted during this investigation was the rigid predator control program that was being practiced by the Indian Beagle Club. Under such circumstances and in the event tularemia is introduced, sick animals are not killed and immediately consumed by predators. Instead, they are allowed to linger in a febrile condition, thus affording added opportunity for dissemination of disease among healthy animals. It therefore appears very logical that where it is desirable to maintain high wild rabbit populations, predacity should be encouraged so sick and unhealthy stock may be continually disposed. A re-evaluation of past concepts regarding trapping or shooting hawks, owls, foxes, bobcats, etc., thereby is strongly recommended.

Here is unprecedented evidence that predators are vital factors in maintaining the "balance of nature". Unknowingly, the Indian Beagle Club has furnished an ideal laboratory which has made possible a significant contribution not only to beagle clubs, but to the cause of conservation in general.

NORTH CAROLINA WILDLIFE

RESOURCE-O-GRAM

A ROUNDUP OF THE LATEST WILDLIFE NEWS

Complete List of Commercial Shooting Preserves

Following is a list of commercial shooting preserves now licensed and in operation until March 31, 1965:

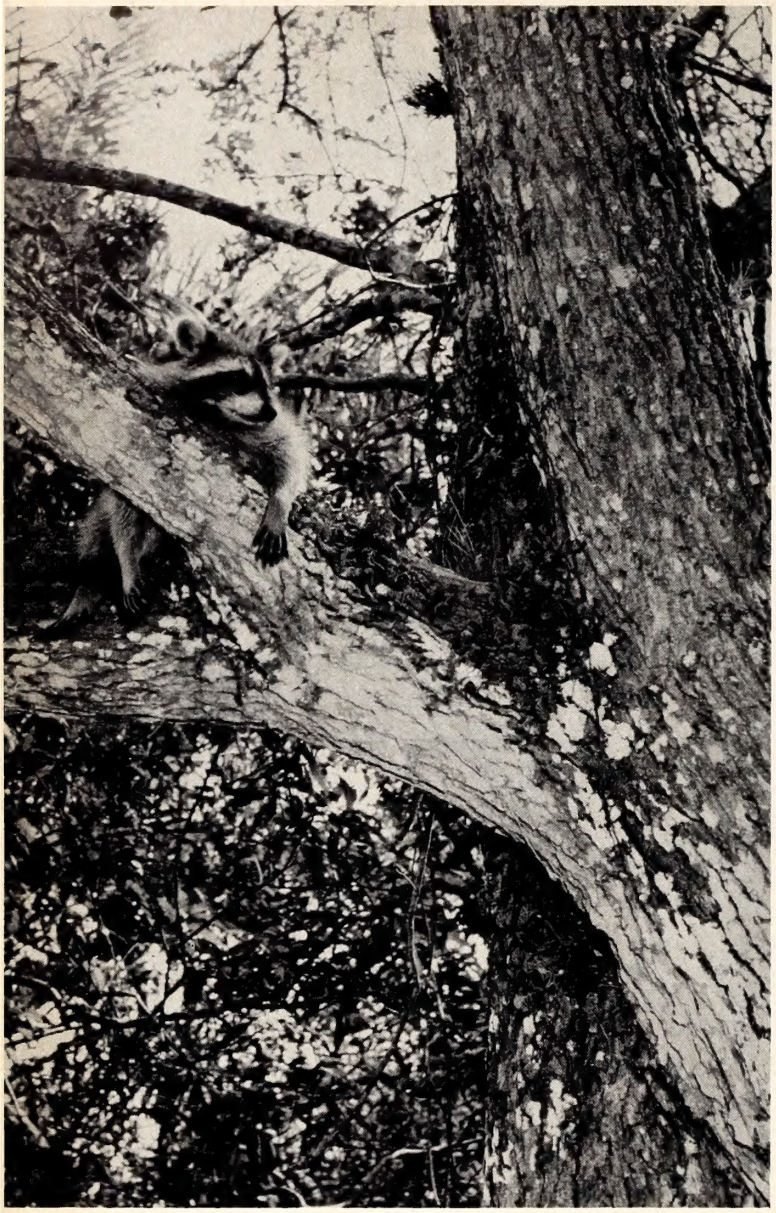
Stoneycreek Hunting Club, 818 Lawsonville Ave., Reidsville, Quail; Paul Long's Shooting Preserve, Rt. 1, Box 46, Maiden, Quail; Carolina Quail Shooting Preserve, Box 1281, Durham, Quail; Crousedales Farm, Rt. 2, Box 389, Lexington, Chukar, Quail; Linville Wildlife Preserve, Rt. 3, Box 387, Kernersville, Quail; Quail Hatchery Shooting Preserve, Rt. 5, Statesville, Pheasant, Quail; Pine Lake Shooting Preserve, Box 595, Troy, Quail; Pinehurst Shooting Preserve, Pinehurst, Quail; Parks and Wright Shooting Preserve, Rt. 5, Asheboro, phone FArmer 2196, Quail; Pleasant Grove Shooting Preserve, Rt. 1, Bennett, Quail; Voncannons Shooting Preserve, Rt. 1, Box 418, Asheboro, phone MAin 5-7499, Chukar, Pheasant, Quail; Kelly Hunting Preserve, Rt. 3, Box 105, Rockingham, phone TW 5-5834, Quail; Jones Brothers Game Bird Farm, Rt. 6, Reidsville, phone DIckens 9-8513.

All Major Hunting Seasons Open

During the month of December the hunting seasons on all major game species except marsh hens are open, with farm game such as rabbits and quail in good supply. During the early days of the waterfowl season warm and mild weather retarded hunting to some extent, but hunting improved as the season progressed. Waterfowl arrived in North Carolina wintering grounds in about the numbers expected, although warm weather farther north in the flyway delayed the arrival of birds somewhat.

January WILDLIFE Will Be Biennial Report

Again this year the January issue of Wildlife in North Carolina will serve as the Commission's biennial report, summarizing activities between July 1, 1962 and June 30, 1964. Such departments as RESOURCE-O-GRAM, "Crackshots and Backlashes" and "The Skipper" will be missing.



Br'er Coon sprawls on a big limb in solid comfort. From this vantage point few activities in the woodland will escape his scrutiny. Coons sometimes loaf bedded down on squirrel nests.

Summertime is a time for leisure and for growing a new se of antlers for buck deer. Sensitive to touch and subject to in jury, the antlers are babied until they harden at maturit

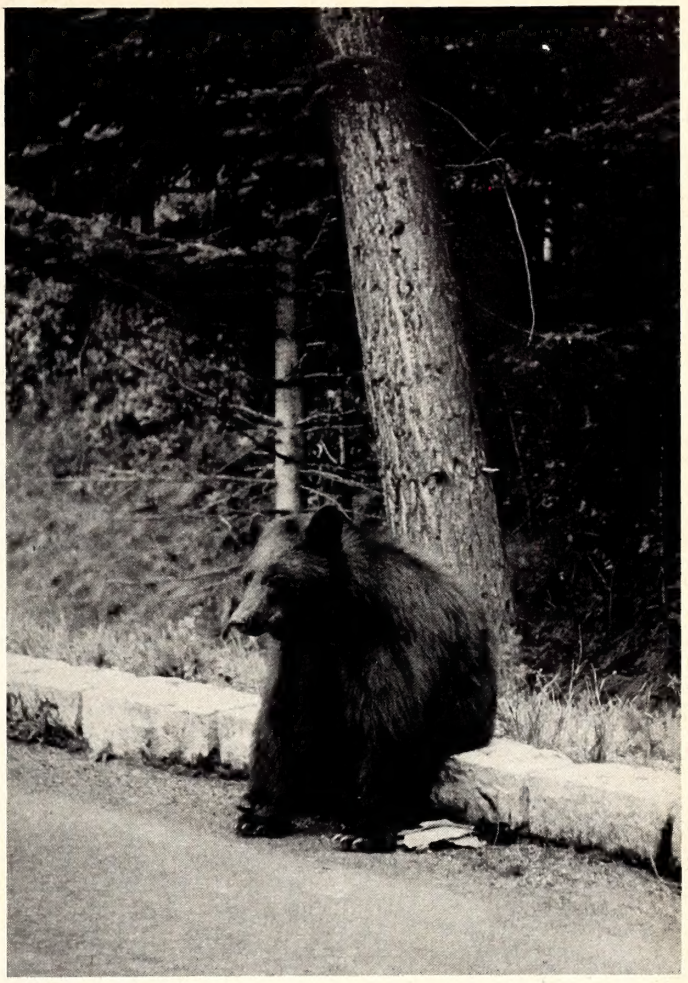
Taking It Easy

Photo Feature by Jack Dermid

THE hunter usually sees wildlife on the run—game putting distance between themselves and danger. He sees the flashing tail of a buck whitetail as it sails into a thicket or listens to the honk of the lead goose as a flight veers away just out of range.

But there are times in the lives of game animals when the cares of staying alive are temporarily forgotten—when deer, geese, and other species take it easy. It seems that relaxation is a necessary ingredient in their lives just as it is with man. In his classic book, **Game Management,** the late Aldo Leopold lists and defines the various types of wildlife cover. One of the types is termed "loafing cover." Leopold describes this as a place, not necessarily large and often located near escape cover, which offers shade in summer or sun and wind-protection in winter. It is a place where wildlife can loaf in comfort with a measure of security.

With eyes shut and bill tucked away, a Canada goose balances in contented slumber at water's edge. While some members of flock relax, others serve as sentinels which watch for danger.

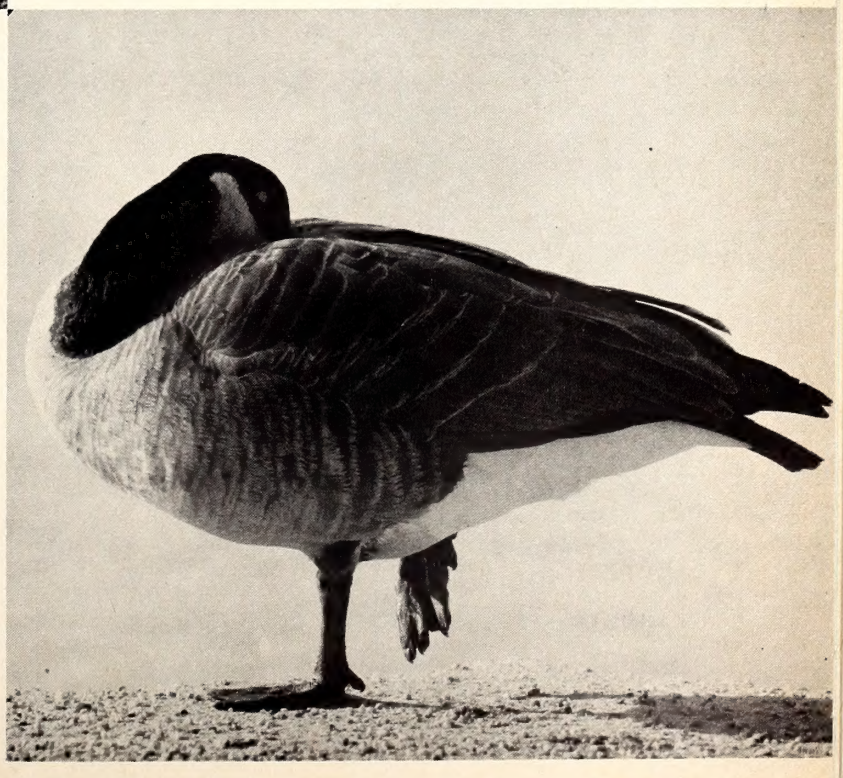


A national park bear sits comfortably on roadside curb while waiting for tourists to come along with a handout. Because of their unpredictable behavior, it is dangerous to feed bears.

Of course caution is not tossed aside when birds and mammals enjoy leisure. Keen senses remain ever alert, and it is seldom that game species are observed completely relaxed. One exception is waterfowl, which often loaf along distant shores, permitting observation with binoculars.

But the sportsman who keeps a sharp eye peeled during his rambles will surely discover many loafing places. The grassy beds of the cottontail are common as are the dusting spots of quail. The latter are usually bare, sunny places along field borders or perhaps in the loose soil at an uprooted tree where birds wallow out depressions and sift dust through their feathers. In dry weather, quail may enjoy the luxury of a dust bath several times a day—perhaps to help rid themselves of external parasites such as lice. The conspicuous areas of packed vegetation where deer have bedded down are well-known to big game hunters.

The photos on these pages show how several species may spend a part of their leisure time.



So You Want to Catch a Muskrat

by F. Eugene Hester

WHETHER you're a farm boy or a city dweller, you might find a new and exciting experience in trapping furbearing animals. It is a type of recreation which equals hunting and fishing for those who learn enough about it to enjoy it.

Muskrats can provide a challenge and a reward to any trapper, and especially so to the begining trapper. A trapper must learn a great deal about muskrats before he can expect to be very successful. He must learn where they live, what they eat, where to find their dens and trails, as well as a host of other things. This is the challenge. For those with the interest and determination to learn these things, there is also the reward of success. Muskrats can be found within a few miles of most places in North Carolina.

The fur of the muskrat is beautiful and there has always been a good market for it. The value of the pelt varies as market conditions change from one season to the next, and the value even varies within a season according to the primeness of the fur.

A FELLOW who wants to trap a muskrat should start out by learning the habits of this animal. He can learn this from life-history books, from trapping or conservation magazines, and by talking with other trappers.

He will soon learn that a muskrat will usually be found in or adjacent to water. Marshes, creeks, canals, ponds and swamps are all favorite places for the muskrat. Because muskrats eat mainly aquatic plants, shallow water areas with a lot of cattails and other vegetation are usually productive spots.

Muskrats eat a wide variety of foods, most of which is vegetable matter. Roots and stems of cattails, bur-reeds, and grasses are some favorites. They also will climb onto river banks to eat acorns when they are available. Many farmers have found that they are also very fond of corn grown along stream banks or ponds. Sometimes muskrats make very noticeable trails into cornfields.

In addition to food, the muskrat needs a suitable place for a den. These dens are of two types. One is the large dome-shaped structure made of aquatic vegetation with a little cave in its center. This is the type of den most frequently used in marshes. They are easy to recognize and most trappers soon locate these if muskrats are constructing them. The second type of den is seldom seen even though it is frequently used. This is the cave dug into the bank of a creek or pond. The entrance is located below the water level, often among old tree roots. The muskrat digs this tunnel several feet into the bank and digs upward until it rises above the water level. By constructing a tunnel in this way, the entrance is hidden below water level and yet the muskrats actually live in the den above water level.

WHEN a fellow decides to become a trapper, the first thing he should do is to obtain a trapper's license and learn the laws pertaining to trapping. Next he will want to find some muskrats. He will find many landowners very cooperative since people often find muskrat burrowing objectionable—especially if it is in the dam of a farm pond.

Who's been here? One way to find out is to know animal tracks and look for them. Close study of the muskrat's paths may reveal some of his secrets.

Tracks of the muskrat are easy to identify. The forefeet are small and the hind ones are large and partially webbed. The muskrat drags his tail as he crosses mudflats and sandbars, and this is an easy-to-recognize mark.

The number 1 or 1½ steel traps are very effective for trapping muskrats. They should always be set in the water, usually where the animals climb out on the bank. The trap chain should be staked in deep water, using a piece of wire to extend it if necessary. By staking the trap in this manner, the muskrat usually will drown quickly. This eliminates suffering and also protects your catch from predators which might otherwise find it in your trap.

Trails are always good places to set traps, but be sure you can recognize the trail of the animal you are after. Remember that people and dogs make the most obvious trails. The best single place to find a muskrat trail is over the center of the dam of a farm pond. Muskrats tend to travel up small streams, and when they come to a dam across the stream, they climb right over it and into the pond. Sometimes it is a good idea to set a trap at each end of the trail—one in the small stream and one in the pond. Some other furbearers like mink and raccoons are likely to use this same shortcut.

Entrances to dens are good spots for traps when they can be located. Sometimes several muskrats can be trapped from a single den. Active dens can usually be distinguished from inactive ones by the absence of silt in the tunnel of well-used dens. Fresh grass in the tunnel is also a good clue.

Sometimes an ear of corn can be effectively used as bait. Although this might help attract a muskrat, it is likely to attract other wildlife which you may not want to trap. It may also help trap thieves to locate your traps.

Where water levels fluctuate a lot, it sometimes is necessary to make a floating set. Traps can be placed in notches in floating logs, with or without bait, and the trap chain wired or stapled to the log.

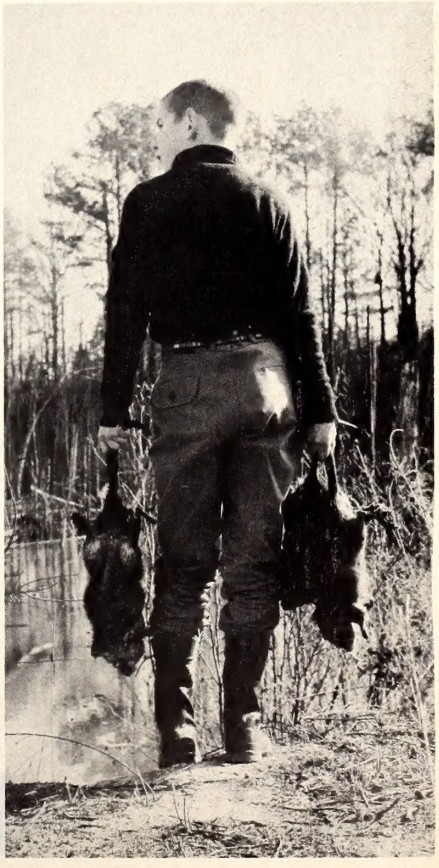
Small springs are good places to trap, especially after the weather turns very cold. Because the flowing water in springs will not freeze, these traps will catch furbearers when most other traps are frozen solid. This is also a good set for mink.

AFTER you have trapped your muskrats you may also be able to sell them unskinned to a local furbuyer. If such a buyer operates near you, it may be to your advantage to sell them this way. If not, you can skin the animals and stretch them, either on commercial fur stretchers or on boards shaped to fit the skins. Muskrat pelts should be stretched with the fur on the inside. They should be placed in a cool, dry place and protected from rats and mice. No preservative should be added to the skin. About one week will normally be required for the skin to dry.

In recent years muskrat pelts have averaged about $1 each. You are not likely to make a great deal of profit at this rate, but it is important to remember that financial profit is not your only reward, because the greatest value of trapping is recreation—the same type of recreation as hunting and fishing.

Photos by the Author

Placing the trap in the right spot may be the difference between a successful catch and none. Make sure that you have the best set possible.



Every day on the trap line won't end like this, but soon you will be able to look forward to a steady catch of muskrats.

Downing the Wild Goose

by Jack Level

IF you can choose your hunting days, wait for "goosie" weather—cloudy, gusty winds, perhaps a little rain, pneumonia weather, a nasty day. The big skeins then break up into smaller groups and the birds enjoy bucking the wind, flying low, hedge-hopping. They relax and play. Bluebird and butterfly weather is not for the wildfowler, nor is a soaking rain.

Like other sportsmen, the goose hunter has to fight off tension. One early evening in North Carolina goose country, the writer, guest at a farmhouse, decided to turn in. He was minus a watch and depended upon his transistor radio for timing the alert hour. That is he would awaken and tune in for the hour. After going to sleep he awoke suddenly and turned on his set and the words came over "This is the 9 p.m. news from Ft. Wayne, Indiana." So on through a restless night. A watch and alarm clock are about as vital to a hunter as a gun. Start the day off well rested and ready for the sport.

Build your blind so that you can see where your wounded honkers fall and can get there in a hurry. Veteran hunters say one downed goose in every fifteen gets away because it is not quickly pursued. Often the hunter is afraid to take up the pursuit because other geese may come in. Gather them as they fall—one in the hand is worth two in the sky. Go after the cripple and remember he can run faster, swim faster and crawl faster than you. Also carry some light shot, for with heavy lead you may well shoot off the head of your cripple.

Never depend on the goose sounding off as he flies over—often they'll fly silently and land without their musical accompaniment.

When you shoot from a blind partially obscured from your objective and apparently score some misses, step up and out anyway and take a look. A goose may well go down after he seems to have made a clear escape.

Once they circle and come near you, let them have it. You may well wait in vain for a better shot and sit waiting while the flock flies into the next county. Once they sit down, line up your shot for a double shoot as they take off. Some prefer the coasting-in shot.

If a small flock lands and there seem to be prospects that others will follow, go after the grounded ones at once. Other flocks landing may spoil the day and you may well get a better shot at 15 geese than 1500. The safest of all is to pick out one lone bird from a giant flock. After shooting wildly into a flock you may learn that the sound and fury has meant nothing.

Propping up a dead goose as a decoy is an old trick of the goose hunter. Yet many hunters have never owned or used decoys.

However, when decoys are left out overnight clean off the dew in the morning as the moisture leaves a shiny surface. Decoys

The 200th Canada goose for Frank Hartung of Washington County, shown here with his wife, Bertha, both in their 80's.

must have a dull finish. And don't leave them in one place more than a couple of days.

A goose will do as many foolish things as a hunter—at least almost as foolish. Be prepared for the unexpected. Even in good feeding territory they have been known to light on a barren highway. Often at night they will be fooled by lights shining on pavement and come in through wires for a landing. They have been known to sit down at night in the streets of a town. They will hit an undisced cornfield from whence they have no observation post of any nature. Decoyed by a small flock on a field, they will pile in flock after flock coming from afar as if they had chartered the place before they left the water. Once headed for this spot nothing will stop them. Their stubbornness seemingly leads them right through danger. Sometimes they will circle right back to a hunter who has banged away at them, perhaps knocking one down. Silly as a goose is no idle phrase. At times only the hunter can be sillier.

A lost loner often will jabber away like an entire flock. He's likely to keep moving until he finds his unit.

When making a blind in a cornfield, don't cut off the stalks and pile them up. Pull them out by the roots and they will stand alone.

Lightning seldom strikes twice in the same place. Geese of course, like to take off and return against the wind. Bucking the wind is sport for them and gives them a quick take-off.

Geese seldom will exit from water over one route more than two or three successive days. The same applies to return routes.

PERHAPS slightly exaggered are the warnings not to have empty shells around (because they shine), wear red in clothing, display a shining gun barrel, or to smoke. Even wild things move in the rushes and reeds and things shine there too and a honker doesn't scare too easily.

Bang! Bang! Bang! We laugh at wild and wooly Hollywood battle with the sheriff's posse against the bad men and the marauding Indians. It has been estimated that a shootin' man of the old West out of modern Hollywood takes upwards of fifty shots to hit his target. But the goose hunter may be a marksman with scarcely better accuracy. In the war on the wild goose, over-all, twenty-five shots per goose is not far wide of the average mark.

A sportsman hungry for action may visualize the goose lumbering in like a plane as an easy shot. But remember the embattled farmers at Bunker Hill were told not to shoot until they could see the whites of the eyes of the Redcoats. The hunter should at least wait until he can see the eyes of the goose. Any other bombardment is likely to be of the Hollywood variety, although a stray shot may bring down a bird up to 80 yards and a ten-gauger up to 100 yards, even more. Geese fly faster than most ducks. A goose has an armor of feathers matted from breaking trails through the sky which has doomed many a plane. He has a few vulnerable spots. The first law of the hunter is patience. Wait! Wait! Wait!

The first live test of your shot —for power and distance—is likely to come when you hear the pellets bouncing off a goose's breast like rain off shingles. Then you realize that you are too far away from your objective, or are using shot that is too light—maybe both. Use heavy ammunition. This varies from 4's and 5's to 2's and in some gunning areas number 4 buckshot with less than 20 shot to a round. Use heavier shot than you think will be necessary.

You can, of course, lead a goose too far as well as not far enough; too far if he is in close where the shot does not have the distance needed for scatter. Bang! The hunter panics after the first shot and pulls the next trigger in a virtual delirium. Panic especially follows the initial miss. A second or third shot may well offer as good a target as the first —even better. Don't be trigger happy—pause between shots like a woman passing a looking glass.

The gunner who shoots by instinct, coming up quickly with the first move and the gun aimed just in advance of his mark, may be as good as the "follow" gunner. The latter picks up the mark slightly from the rear and follows until past it enough for the allowance he makes for speed of flight. This is something like the follow-through in golf or other sports, and by the follow-through the gunner is out ahead of the first target and following his next target, and the goose flies into the arc of his pattern.

A good, experienced marksman often can get in three and four shots with a double-barrel gun. Withdrawal of shells from a hunting coat pocket or shell vest may well be a time loser. When things look good and the geese are coming in, a reserve shell may be palmed in each hand. Of course, the guy wearing gloves is out of luck—he may be out of luck anyway.

MOST hunters arrive at their blinds up to an hour or more too early. Only a few geese take off until the first rays of the distant sun appear. On a clear day geese are sure to return from the fields at a high altitude. You can fold up and head home on these days.

Many hunters are weighted down with clothing from heavy underwear to excessive shirts and sweaters, padded out like the breast of a honker. Unless he has a long reach, such a hunter puts a burden on fast action. Travel light. When crawling toward a gaggle of geese, you can sometimes shed excessive clothes, like a hunting coat and sweater and make a run for the flock.

A hunting coat makes a good soft seat and offers protection from morning dampness.

When the moon is full or near-full, geese won't take off from their watering places before the moon shows up, thus eliminating late afternoon flights and shooting. And when they feed all night they are not likely to show up in the fields the next morning. When clouds darken the moon the usual evening flight takes place.

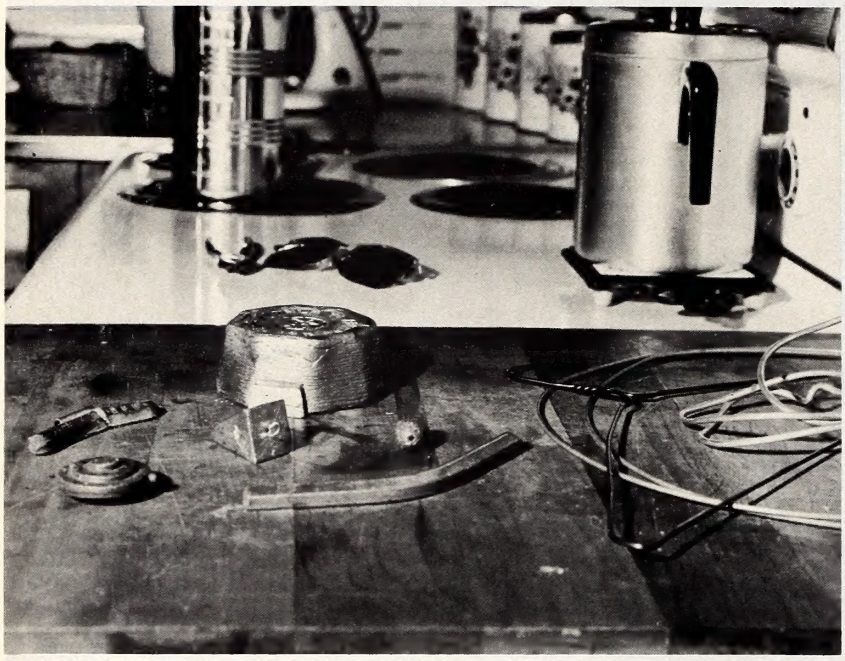
Always remember, both you and the goose will make mistakes; you the most.

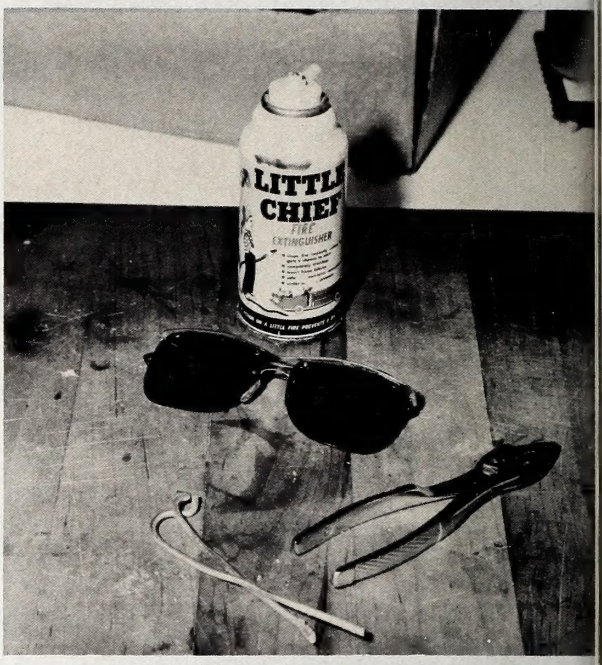
There are several types of decoy anchors on the market and at least that many home-made varieties. Described below is the procedure for making one type. You need never again rob your tackle box.

Decoy Anchors

While You Wait

Photo Feature by John Parker





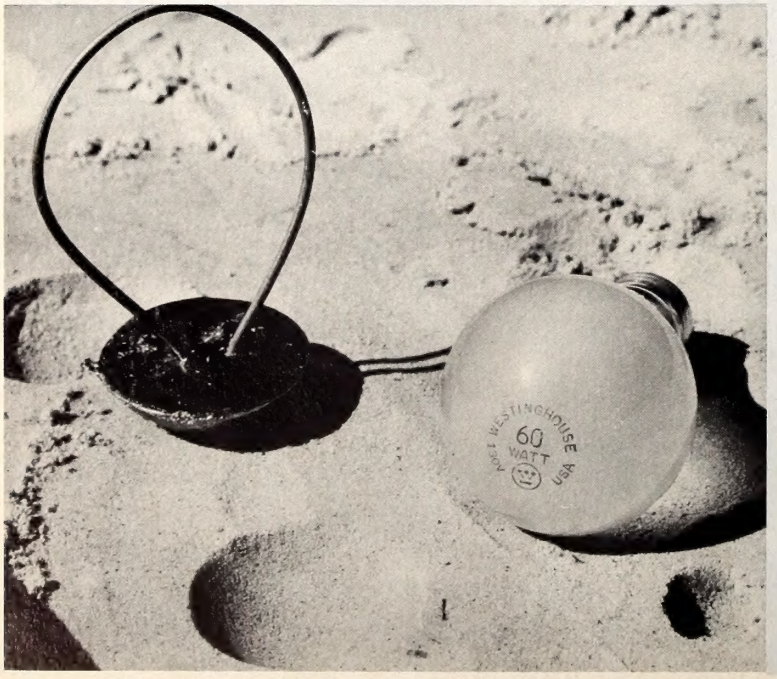
1. **Lead is the prime ingredient in this recipe. Try wheel balance weights, discarded fishing sinkers, miscellaneous scrap lead, or bar stock from your local plumbing supply store. Lead usually comes in five-pound blocks and sells for about 35 cents per pound. Ten pounds will make about 25, four-ounce anchors.**

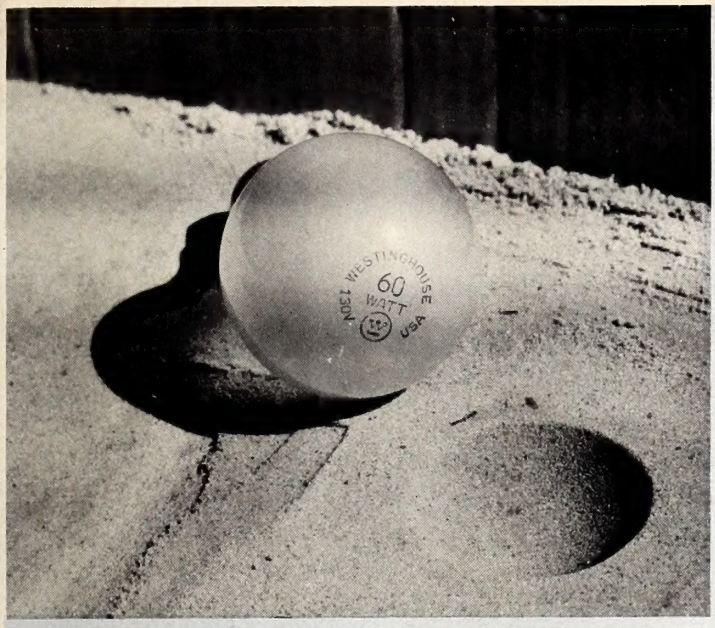
   Wire is the other ingredient. It should be of a heavy gauge and rust proof. The amount of wire needed will depend on the size of the loop which, of course, depends on the size of your decoy.

2. **Gather up a few safety devices before you start. The glasses will protect the eyes in the event of a splash. The fire extinguisher probably will not be needed but it is a good item to have in the kitchen anyhow. Strong pliers or a pot holder should be used in holding the tin can of molten lead. The wire gadgets pictured here are used to hold the loops in position, thus keeping the fingers away from molten lead. Make sure the work area is clear of all busy little "helpers."**

5. **After one or two uses, the molds or depressions (pour several at one time) will have to be reshaped. If the sand becomes dry, remoisten or stir and repack. The lead will solidify quickly after being poured and can be removed from the mold with pliers in about a minute.**

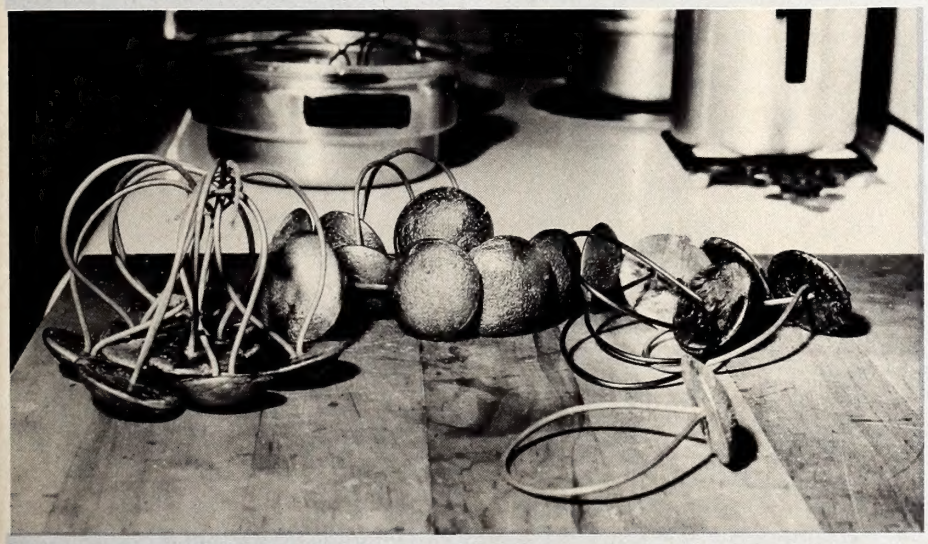
6. **A pan of water in which to cool the anchors as you make them will help prevent burned fingers. Hot steam will rise as you drop the anchors in the pan so use pliers for this also.**





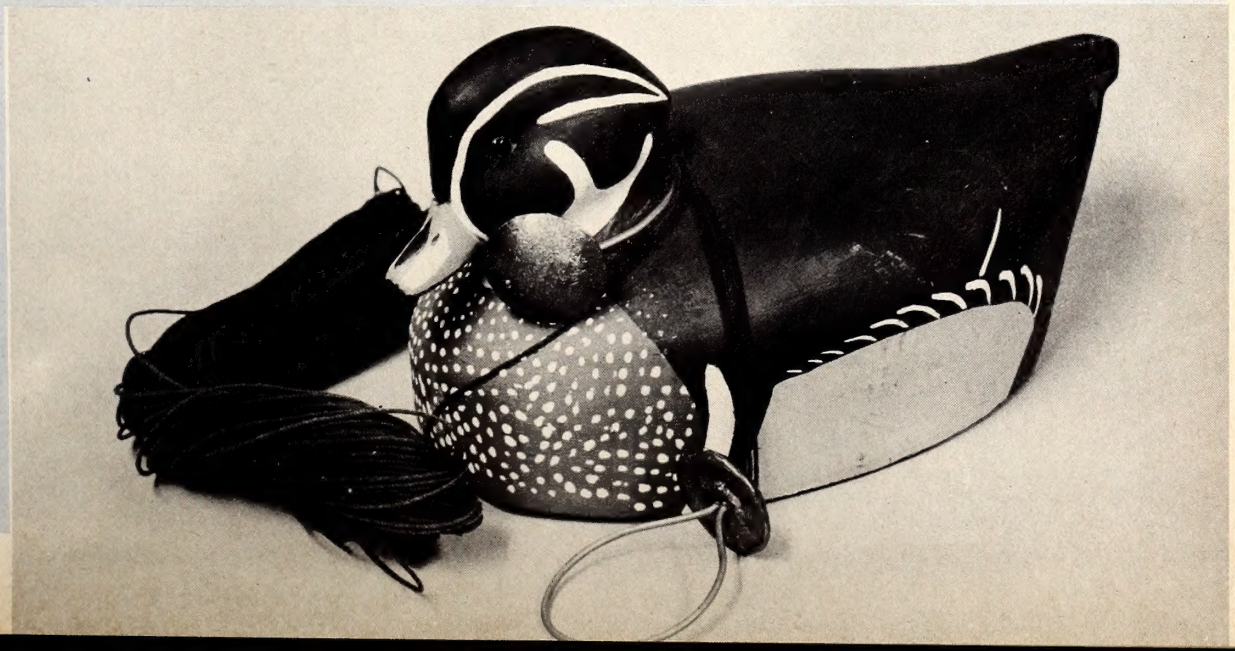
3. For the mold, a box of moist sand will do fine. The depression is made with a 60 watt light bulb. Size of anchors needed will vary with your own particular use. You may need more than the standard three or four ounces for geese decoys or for use in extremely rough water. Since the larger anchors will cost more you should give careful consideration before making them much in excess of three ounces. A four-ounce anchor should not cost over 10 cents, even if you buy the lead and wire.

4. After the depression has been made in firmly packed sand, position the wire loop being careful not to deface the depression. Use the wire gadgets to hold the loop in place. The handiest container for melting the lead will probably be a coffee can; but be sure whatever you use has a strong crimped-in or solid bottom. It will take about ten minutes for large pieces of lead to melt on the kitchen stove.



7. No need for last-minute searching for something to hold a decoy in position when you have cooked up a batch of anchors like this. Once production is started you might as well make a dozen or so extras to replace lost ones or for additions to your flock.

8. This type of anchor has good holding power even on hard bottoms. The storage loop will prevent tangled lines. Good anchors and decoys deserve to be tied together with good line. The color of the line should blend with water.



DEPARTMENT OF LETTERS TO THE EDITORS, FIELD NOTES, AND ITEMS OF INTEREST

Conducted by Rod Amundson

This magazine—your magazine—is designed to bring the message of wildlife conservation to the people of North Carolina. In recent years this base of "wildlife" has been broadened considerably—often to the consternation of many of our readers. To define "wildlife" is, of course, all but impossible. But certainly it goes beyond its original concept of strictly game and fish.

The subject matter of this magazine, as you well know, varies a great deal. It includes stories of much in the outdoors that is aesthetic, such as song birds, flowers, insects, and so on. It pursues water sports other than fishing, such as boating and water skiing. It offers hints on how to stay alive when hunting; on how to better enjoy a camping trip.

This magazine then is a collection of many bits and pieces, which when fitted together, we hope will give the total picture of the sport and the problems of our wildlife and its many related fields.

Changes comes slowly to *Wildlife,* but when we feel that the change contributes to a better publication, it is incorporated into your magazine. Sometimes we have apparently hit the mark, other times you have mildly disagreed with the changes. With this issue, come a few more changes. The general type size and face is slightly different, the column width is a bit narrower, and the cover has been redesigned. Content-wise, we will still use our best judgement as to what we feel you want to read and learn about; if we're wrong, you tell us. It's your magazine.

Friendly

DEAR SIRS: Recently my family and I had a novel experience while working in our Christmas tree acreage here in the foothills of the Great Smoky Mountains. Shortly after we began work one day last month we noticed a small gray bird slightly larger than an English sparrow which was obviously following us closely, eating insects flushed from cover by our activity. The bird showed no fear of us whatever and would feed from our hand. We had to exercise great care to keep from stepping on it. It walked about on the ground in an unhurried manner seeming to prefer this means of locomotion to flight. Its flight, when it did fly, was close to the ground and by a regular beat of its wings. It rarely flew higher than the lowest branches of trees. It never made any sound. We fed it an enormous quantity of worms and small grasshoppers before satiating the bird's appetite. Even then the bird continued to remain quite near us and as we departed from the field at the end of the day it followed us, walking in trail behind us the 300-yard distance to our home. It continued to seek us out wherever we were working in that section of our farm—a period of three days. So far we have been unsuccessful in our efforts to identify this bird although we have consulted with an authority affiliated with the National Audubon Society. Could you give us a clue? CHARLES E. LONG, JR., BRYSON CITY

One possibility here is a young bird of some species which was yet unable to fly well and which had not attained any real fear of man. A tufted titmouse is another possibility . . . Ed.

Big Game, Big Deal

DEAR SIRS: For many years I have enjoyed hunting and fishing in the wildlife refuges of our state, primarily in Pisgah National Forest. I had always accepted the daily permit and check-in check-out ritual as necessary, although I have been known to grumble a bit when I found I was the 100th car waiting in line.

For three of the last four seasons, though, I have hunted with my brother-in-law in Rockingham County, Virginia, and have found an entirely different situation exists there. He too, hunts on National Forest land — George Washington National Forest — in an area cooperatively managed by the Virginia Commission of Game and Inland Fisheries. But to my surprise there was no daily permit, no checking station, no two hour wait—we simply proceeded to the area we wanted to hunt, camped where we pleased with a free campfire permit, and if we bagged any big game we took it to the nearest checking station (set up in country stores at various parts of the county) to be weighed and recorded. This freedom from red tape adds a great deal of pleasure to the few days of hunting we look forward to all year.

The recent increase in fees for hunting permits comes as disturbing news to most of my hunting friends. I do not write this letter to gripe, but to ask the Commission why we could not model our program along the lines of Virginia's and use a big-game license to replace the revenue from daily permit sales. The Forest Service favors this plan. A number of advantages would result: Refuge managers could spend their time in habitat improvement, protection, and law enforcement, rather than permit writing; our big game program could be extended over a broader base, rather than the limited acreage of the intensive management areas; all big game hunters, not just management area hunters, would share in the cost of the big game program through purchase of their big-game license for a modest fee; and a very important advantage to biologists, recor' of kills made outside the manageme

TIPPER FLINTLOCK'S

Tips on Shooting Safety

- Handle every gun as if it were loaded.
- Always point your gun in a safe direction.
- Keep your gun unloaded when not in use.
- When hunting wear bright colored clothing.
- Be sure of your target.

Be A Safe Shooter

THE NATIONAL RIFLE ASSOCIATION

areas would be available, making it possible to know how many deer we actually harvest, instead of guessing. Also, no more long pre-dawn lines of cars.

Virginia tried the permit system on their Big Levels area in 1951 and 52, but dropped it and has maintained that the less controls the better. By reducing the cost of administration, their commission operates an effective management program with very nominal license fees. The Virginia resident buys a $3.50 state hunting license, $1.00 big game license, and a $1.00 National Forest stamp. That's all—$5.50. He's allowed one bear, two turkey, and one or two deer depending on the area. The season on deer ranges from a week upward. By contrasts, if I hunt in Pisgah for bear and deer for a week, it will cost me $4.25 for my license and $7.00 a day for permits, or $46.25. I can spend the same week in Virginia on non-resident licenses for $21.75. Another contrast: in three hunts in Virginia I bagged a wild turkey and two bucks. I've hunted many days in Pisgah, and bagged nothing larger than a grouse. You may say, "so go on back to Virginia." Maybe I will, but that's not the point.

It may be true that an increase in fees would be necessary to maintain our present program, but an alternative with many advantages exists—why not scrap our permit system as many other states have done? DR. J. P. CARPENTER, HENDERSONVILLE.

DEAR DR. CARPENTER: Your good letter to Wildlife in North Carolina has been referred to us for reply. Vacation time and field responsibilities have prevented our attending to it earlier.

The points you make in regard to the Virginia system of hunting are good ones. We have followed it with interest for some time and several years ago initiated action in its direction by removing most of the red tape surrounding management area hunt participation in our state. You may recall that at one time all big game hunts were by advance application and total participation was about one-tenth its present volume.

Studies have been in progress to determine the best time and method of further approaching the "extensive" system used in Virginia. It is our opinion that overly rapid conversion to this system would not be in the best interest of most sportsmen and would be disfavored by many.

We appreciate having the benefit of your thinking on this matter and trust that you will continue to let us hear from you about matters of mutual concern. FRANK B. BARICK, CHIEF, DIVISION OF GAME.

Teenage Tanager?

DEAR SIRS: My wife and I are bird lovers, whether in the field or in our yard.

We have some bird feeders in our yard, and my wife feeds the birds the year round. One Christmas our oldest son gave us a window feeder for a Christmas present. I installed this feeder in the kitchen window, just outside from the kitchen sink, and some of the birds have become quite tame.

There is one though, that has intrigued us. A summer tanager male has been coming to this feeder for four years that we know of. For three of these years he has been eating out of our hands a number of times each day while he is here.

According to our bird book the summer tanager winters in Central and South America. How this bird can make this long flight against hazards of the elements, and predators and survive so long is a mystery to us. He leaves at approximately the same date each fall, and arrives the same date each spring. The first day he is back he will come to the window and eat out of our hand. He will even perch on a wire near by and call, fly over to the feeder and watch us put up the window, then the screen, and while we are talking to him will fly into our hand, and eat while we talk to him. We call him "Pretty Boy." He is red all over and about the size of a cardinal, but has no topknot. I have taken some pictures of this bird in my wife's hand, and since I take the pictures from inside of the house, I can only get the picture of her arm with the bird in her hand. I am enclosing one of the pictures. W. C. BOBBITT, WARRENTON.

We appreciate this interesting letter, but regret the picture was not suitable for reproduction. The ways of the wild are wonderful indeed!—Ed.

The new officers of the North Carolina Wildlife Federation are, (left to right), Turner Battle, Executive Director and Treasurer; Ed Todd, Central Vice-President; William Armstrong, Western Vice President; Chester Arnold, President; Fred Barkalow, Eastern Vice President; and Clyde Harmon, Secretary.

To Each His Own

DEAR SIRS:

One of the best letters that I have read lately is "Skin Skiing" by Parker Whedon. I agree with Mr. Whedon. Why should our wildlife management areas be taken over by people that don't care about wildlife? Most of these people have never seen a deer and care less.

What's going to happen to our deer when during the picnic season the crowds grow larger each year and start pushing deeper into deer habitat on all-day hikes, etc.? Deer are not going to stay around, they can't stand the smell of man, it spells danger. Well, where will they go?

As for the fishing and boating access areas, new roads will have to be built right through good deer country, then this calls for eating establishments and gas stations nearby, plus numerous other things where large crowds gather for recreation. To see just how many fishing and boating access areas we have, let's refer back to the July issue of WILDLIFE IN NORTH CAROLINA, pages 11, 12, and 13. There we see 80 different locations. There are plenty of places left for fishing and boating areas other than Uwharrie Management Area. Uwharrie Management Area was set aside for a deer restoration area. Let's keep it that way.

I noticed in your Division enforcement record for June in the hunting and fishing column that 39,858 per-

KNOW YOUR PROTECTOR

Bruce R. Beck

Bruce R. Beck, Wildlife Protector stationed at Red Springs, was born in Lexington, North Carolina on September 7, 1936. His parents are Mr. and Mrs. C. Reid Beck of Lexington, North Carolina. Beck is a graduate of Davis-Townsend High School of Lexington, and attended Jones Business College of High Point, North Carolina.

After completing the Pre-Service training school for Wildlife Protectors at the Institute of Government in Chapel Hill in 1958, he was employed by the Wildlife Resources Commission in November, 1959 as a Wildlife Protector Trainee in Craven County. He was assigned to Red Springs April 1, 1960. Beck has attended six in-service training schools since his employment.

Protector Beck is a member of Southeastern Association of Game and Fish Commissioners and the Woodmen of the World. He is married to the former Sandra Lee Hilton of Lexington, and they have two children: Julie Ann, age six and Timothy, age one. The Beck's reside in Red Springs and are members of Mt. Tabor United Church of Christ of Lexington, North Carolina.

DIVISION ENFORCEMENT RECORD FOR JULY, 1964

HUNTING & FISHING

Persons checked	18,920
Total prosecutions	725
Total convictions	711
Total cases not guilty	4
Total cases nol prossed	9
Total cases dismissed	1
Total fines collected	$2,797.00
Total costs collected	$5,531.00

BOATING

Boats checked	5,115
Total prosecutions	225
Total convictions	219
Total cases not guilty	0
Total cases nol prossed	5
Total cases dismissed	1
Total fines collected	$ 422.45
Total costs collected	$1,893.55

All fines and any arrest or witness fees are paid into the school funds of the counties in which the violations occurred, and no part of the fines or costs collected are paid to the North Carolina Wildlife Resources Commission or its personnel.

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sons were checked. Now let's go back to the January issue 1963 "The Biennial Report" issue. There we find we have only 102 Wildlife Protectors and 28 Wildlife Patrolmen. It seems to me that this is a job in itself without having to spend so much time on rivers, and lakes to check people that have no interest in wildlife at all.

As for the article in WILDLIFE IN NORTH CAROLINA, we need more information such as "Caswell Wildlife Management Area" by Earl W. Sanders. This is the type of article that we need. What is being done for Wildlife, where, when and the results, and I could name many more just as good. THANK YOU for your well written article Mr. Sanders. E. C. DAVIS, JR., CHARLOTTE

DEAR SIRS:

I enjoyed the water skiing article and don't understand why anyone would want to limit the articles in the magazine to any one group. The more variety the magazine has, the more variety there will be in the interests of the subscribers, and the more people there will be to read of the problems involved in wildlife management. After all, this is the best and most reliable source of material for the North Carolina sportsman.

While the protectors may be more consumed with protecting "wild lives" than wildlife during the boating season, that too is an important part of the community responsibility. The $3.00 we pay annually couldn't be better spent, and it would be most interesting to note the number of accidents since the Commission began enforcing the rules than prior thereto, based upon a per boat population.

Thanks for the excellent magazine you are sending your subscribers. I'd rather have it than any of the national magazines devoted to hunting and fishing. Let's have more variety and more information, not less information and a more pointed interest. The larger the variety included, the better the service you are providing for North Carolina sportsmen. JOHN O. WEST, JR., CHARLOTTE

Information, Please

It isn't often, but once in a while we get *Wildlife* subscriptions which fail to give us all the necessary information. On a few we can't read the subscriber's name, or maybe the address is incomplete, and several have come in without the city. One with which we need help now is: Calvin Carter, Jr., 531 Bracken Street,—no town—. We think it was sold in the Sandhills Wildlife Management Area vicinity. Can you help?

To Make a Little Dough

DEAR SIRS: Could you give me a good recipe for making dough bait for carp fishing? What can you add to the finished bait to keep it from souring and smelling? I know there is something that can be added as a preservative because commercial dough bait will usually last indefinitely. MRS. J. H. GIBSON, CHARLOTTE

Dear Mrs. Gibson: We have been doing some checking on this but haven't found a good recipe. Dough bait can be refrigerated or frozen to keep it from spoiling. Perhaps some of our readers can provide a good recipe.

Rod Amundson, Editor

Good Game

DEAR SIRS:

Do give us more articles about the care and use of our edible wildlife resources. "GAME: It *Can* Be Good" in the October issue was just the sort of thing we need, and some of the points may well be expanded and stressed. I have wanted to see this kind of information in print for a long time.

Point #4 on page 18 in the procedures to assure the hunter and his family true enjoyment of his day's hunt needs comment, I think. It read, "Most game will retain its flavor longer if frozen in water. Plastic or milk cartons are suitable for this."

Air is an enemy of frozen meat, so

you want to keep it out of the package. You want to keep all of the meat's original moisture right in the meat where it belongs. The air-out-moisture-in requirement demands careful packaging procedures and proper materials. I believe there are better ways to do this than with water and milk cartons. If you wrap (or mold) good packaging material close to the meat and make a tight closure it will save space and weight in the freezer. If you freeze cooked-and-cooled meat in a container it keeps better if covered with broth or gravy, however it does as well wrapped properly.

The principle involved is: keep air out; keep moisture in. NITA ORR, Specialist in Frozen Foods, Agricultural Extension Service, N. C. State College.

Not Much Help

DEAR SIRS: Can you tell me how I can keep hunters off my farm? I've posted each year in Burke County Courthouse, and over twelve on place; yet people are constantly hunting.

I want wild birds and animals alive, not killed. Quail come right into my yard and eat chicken feed. Deer only lift their heads from eating in meadows as I go about farm chores or drive car out. John's River is my east boundary and men even come up by boat! I am frantic over fox hound men turning dogs in, and the dogs chase the deer.

I see this the whole year. This spring, dogs killed young deer, while their owners sat in car on highway! Wildlife men said they "could do nothing." Yet I help pay their wages, with taxes. I could kill dogs but I love animals and dogs are not to blame. However, if it's my wild friends or dogs, I shall kill dogs.

Can you tell me any other way to save wonderful animals? I have 300 acres of timberland, good feed and protection for general care; even had seed planted for extra bird food, raise corn and oats, and wheat, so food is plentiful. Even the squirrels seem to fare well on it—in fact too well for my tenant's ideas, as squirrels eat corn from roasting ears on to ripened corn.

Inclosed is $1.00 for two years subscription to *Wildlife* for Marshall Fleming, tenant with three children; I want them to know wild animals and learn to care for them.

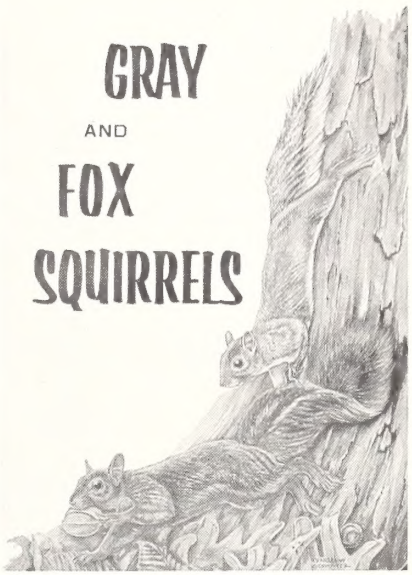
My son in California writes that he enjoys your magazine, and I certainly do. MRS. JULIA CORPENING, MORGANTON

Mystery Solved?

DEAR SIRS: In your department, "Crack Shots and Backlashes," for the July 1964 issue of *Wildlife in North Carolina*, I have noted with particular interest your short item titled "Frog Mystery," in which Dr. R. K. Butler, Director, Haywood County Health Department, Canton, calls attention to frogs that had died in the shallow water along the shore of a lake. I am not sure from Dr. Butler's description as to the identity of the "frogs," but I am rather sure that what he has described I have related in some detail on pages 90-93 of my book "The Wonders I See," Lippincott, 1960. If you have a copy of my book in your library you may be interested in the story in which Julian L. Dusi, a biologist of Charleston, West Virginia, discovered a breeding aggregation of several hundred American toads, almost all of which were dead. On examining them in the laboratory and upon making bacteriological tests of the dead toads, he discovered they had been afflicted with "redleg," a disease caused by a bacillus which produces congestion in the blood vessels of the bellies of toads and hemorrhages under the skin. The disease is often fatal. JOHN K. TERRES, CHAPEL HILL

Editor's Note: Mr. Terres is presently General Editor of Lippincott Nature Books, and is one of America's outstanding naturalists.

BOOK REVIEW



HERE is another booklet, a short course, for hunters by the noted conservation writer John Madson. **Gray and Fox Squirrels** is a comprehensive study in 112 pages. There are many photographs and sketches by other noted conservationists. The gray squirrel is North Carolina's most popular game species according to recent surveys. The new Olin publication offers Carolina squirrel hunters an opportunity to compare notes with avid hunters as well as with naturalists from other parts of the nation. The author has drawn from the experience of many in compiling the chapters on life history, hunting, and management. And in typical Madson style, he has included a smattering of philosophy and poetry. **Gray and Fox Squirrels** will take you from the squirrel migrations of the nineteenth century to the game management techniques of today. A copy of this new booklet as well as **The Cottontail Rabbit**, which is done in similar fashion, can be obtained from the Conservation Department of Olin Mathieson Chemical Corporation, East Alton, Illinois. The price is $1, plus postage.

John Parker

ADDRESS CHANGE NOTIFICATION

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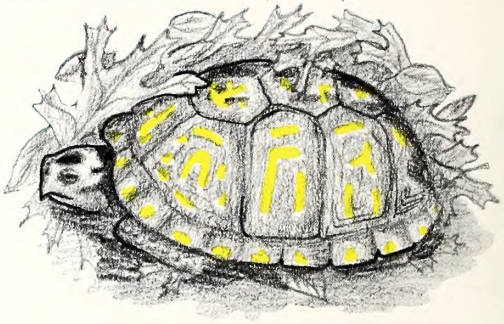
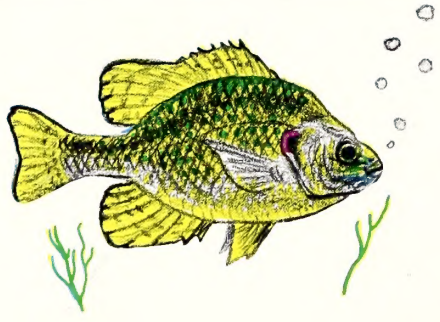
ANIMALS in WINTER

As the temperature of its surroundings drops, the frog begins its long sleep at the bottom of the pond. The box turtle burrows in leaves for winter protection.



Although the black bear has a reputation for winter hibernation, he may stay active in mild weather.

Most fish feed very little during cold weather and thus grow practically none.



During severe weather, game and song birds may need extra food. Are you helping?

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BIENNIAL REPORT ISSUE
FOR THE BIENNIUM
JULY 1, 1962 - JUNE 30, 1964

Wildlife in north carolina

JANUARY, 1965

State of North Carolina
Wildlife Resources Commission
RALEIGH, N. C. 27602

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JAY WAGGONER, GRAHAM

His Excellency, The Governor of North Carolina
The Honorable Members of the General Assembly
Raleigh, North Carolina

Dear Sirs:

The North Carolina Wildlife Resources Commission is pleased to submit herewith its ninth biennial report covering the period from July 1, 1962 to June 30, 1964.

To bring this report to the attention of as many of our sportsmen and other good citizens as possible, it has been combined with the January 1965 issue of Wildlife in North Carolina.

While we take some small pride in our accomplishments during the biennium, we recognize that these could not have been achieved without the assistance and cooperation of the Administrative, Legislative and Judicial branches of our government, as well as news media, organized groups and interested individuals.

The Wildlife Resources Commission and its employees take this opportunity to express sincere appreciation and best wishes.

Very respectfully yours,

O. L. Woodhouse

O. L. Woodhouse, Chairman
Wildlife Resources Commission

STATE OF NORTH CAROLINA

TERRY SANFORD
GOVERNOR

NORTH CAROLINA
WILDLIFE RESOURCES COMMISSION

LEE L. POWERS, CHM. _ _ _ _ _ LAKE LURE
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DIVISION CHIEFS

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FRANK B. BARICK _ _ _ _ _ _ _ _ GAME
J. HARRY CORNELL _ _ _ INLAND FISHERIES
ROBERT B. HAZEL _ _ _ _ _ _ PROTECTION
J. THOMAS WILLIAMS _ FINANCE-PERSONNEL
C. FLOYD WILLIAMSON _ _ _ ENGINEERING

WILDLIFE IN NORTH CAROLINA recognizes the need for close cooperation between State and Federal conservation agencies and the people who hunt and fish—to bring about a restoration of our renewable resources. The Editor gratefully receives for publication news items, articles, and photographs dealing with the North Carolina out-of-doors, but reserves the right to reject materials submitted. Full credit is given for all materials published.

* * *

Entered as second class matter at the Post Office at Raleigh, North Carolina, February 23, 1948, under the act of August 24, 1912.

* * *

SUBSCRIPTIONS—Fifty cents per year, one dollar for two years. Make remittances payable to WILDLIFE RESOURCES COMMISSION. Any employee of the Wildlife Resources Commission may accept subscriptions, or they may be forwarded to Post Office Box 2919, Raleigh, N. C. Stamps cannot be accepted.

Wildlife IN NORTH CAROLINA

The official publication of the NORTH CAROLINA WILDLIFE RESOURCES COMMISSION, Raleigh. A monthly magazine devoted to the protection and restoration of our wildlife resources and to the improvement of hunting and fishing in North Carolina.

JANUARY, 1965 VOL. XXIX, NO. 1

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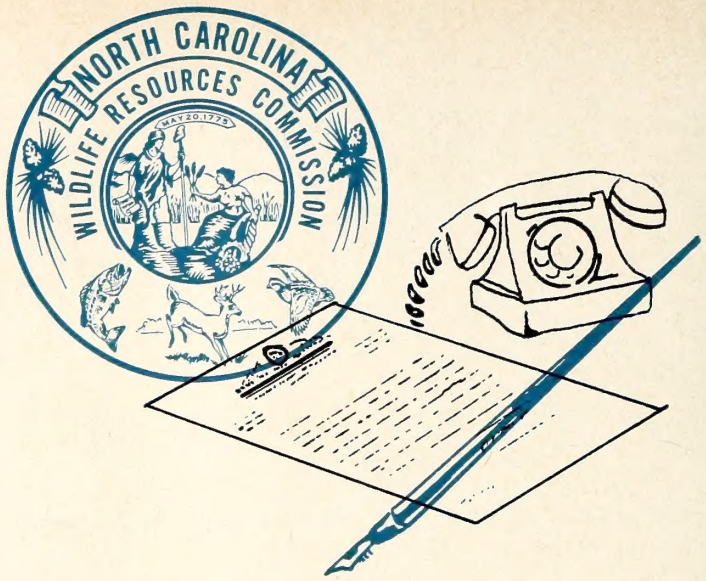
DUANE RAVER _ _ _ _ _ MANAGING EDITOR
JOEL ARRINGTON _ WRITER-PHOTOGRAPHER
LUTHER PARTIN _ _ WRITER-PHOTOGRAPHER
JOHN PARKER _ _ _ _ _ OUTDOOR SAFETY

Our Biennial Report Issue is a bit different inside, and so is our cover. We hope that you find your favorite wildlife species pictured here, but of course artist Tom Hale couldn't put them all on even by using both the front and the back! If you'd like an extra copy of just the cover, we will be glad to mail you one while the very limited supply lasts.



Administration

THE Wildlife Resources Commission was created in 1947 with enactment of the Wildlife Resources Law by the General Assembly. This law provided for the transfer to the new agency of all functions formerly the responsibility of a division of the Department of Conservation and Development; namely, the Division of Game and Inland Fisheries.

According to Article 24 of Chapter 143 of the General Statutes of North Carolina, the Wildlife Resources Commission was established to manage, restore, develop, cultivate, conserve, protect, and regulate the wildlife resources of the State, and to administer the laws relating to game, fresh-water fishes, and other wildlife exclusive of commercial fisheries, to the end that there may be provided a sound, constructive, comprehensive, continuing, and economical game, game fish, and wildlife program.

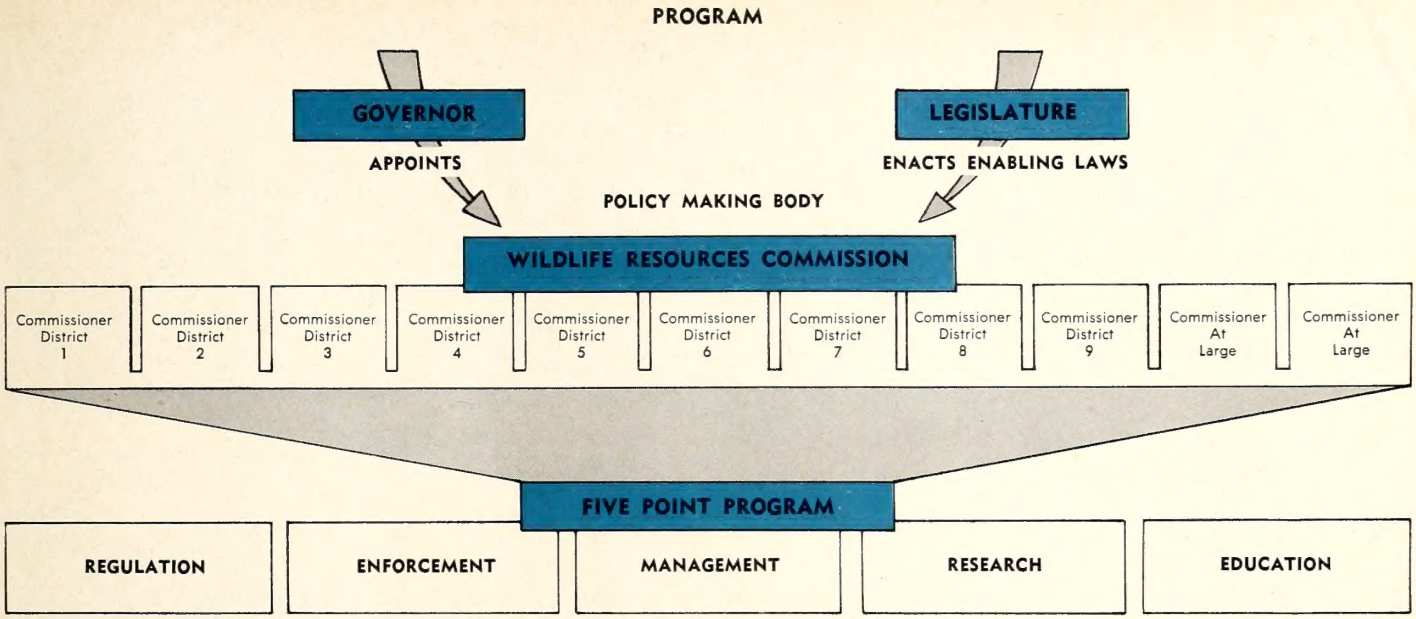
Subsequent acts of the General Assembly, particularly the Boating Safety Act of 1959, have broadened the authority of the Commission. The administration and enforcement of laws and regulations pertaining to the registration and safe operation of watercraft on the waters of the State, as well as an educational program to promote boating safety, have become important functions of the Commission.

THE Wildlife Resources Commission is self-supporting. It receives its operating revenue primarily from the sale of hunting and fishing licenses and motorboat registration certificates. Under this system, the person who benefits directly from utilization of the State's wildlife resources and waters pays for their management.

An eleven-member policy-making Commission, appointed by the Governor, determines its own organization and methods of procedure and selects and appoints an executive director, who is charged with the supervision of all activities under the jurisdiction of the Commission. The Commission consists of nine members representing the nine wildlife districts in the State, and two members representing the State at large. The terms of the members overlap so that those of three members from the districts and one from the State at large expire every two years. This arrangement provides for continuity of services of seven of the eleven members, with a resultant stability in Commission policy. During the biennium, the Commission met in official session eighteen times.

THE General Assembly has given the Commission broad administrative and regulatory powers. The chief purpose of the official meetings has been to establish policy and plan implementation of these powers. The Com-

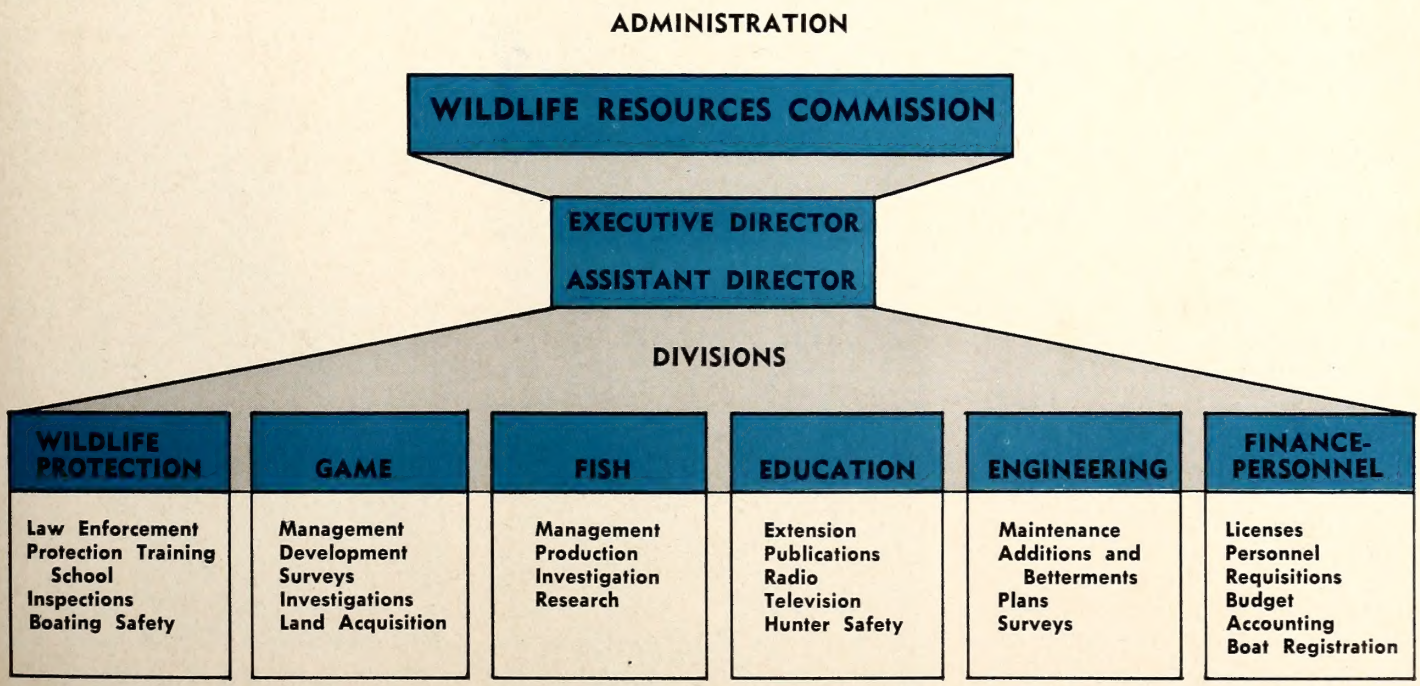
This is the Wildlife Resources Commission in action in its Raleigh offices. This policy-making group met eighteen times during the biennium to carry out official business.



mission has adopted budgetary plans for the proper use of the Wildlife Resources Fund, held public hearings, considered and adopted regulations governing open seasons, bag and creel limits on game and inland fish, signed cooperative agreements with other agencies and individuals, and handled matters pertaining to personnel.

The Commission has continued to promote on a state-wide basis five fundamental functions: *regulation, enforcement, education, management,* and *research.* These functions are accomplished through the operation of six divisions; namely, *Protection, Education, Game, Inland Fisheries, Engineering,* and *Finance and Personnel.* While assignments of responsibility for primary work have been specified, all divisions have been encouraged to assist with all five functions wherever circumstances permitted. This enables the over 300 employees of the Commission to render maximum service to the sportsmen and other interested citizens of North Carolina.

The detailed accomplishments of each division for the biennium are related on the following pages.



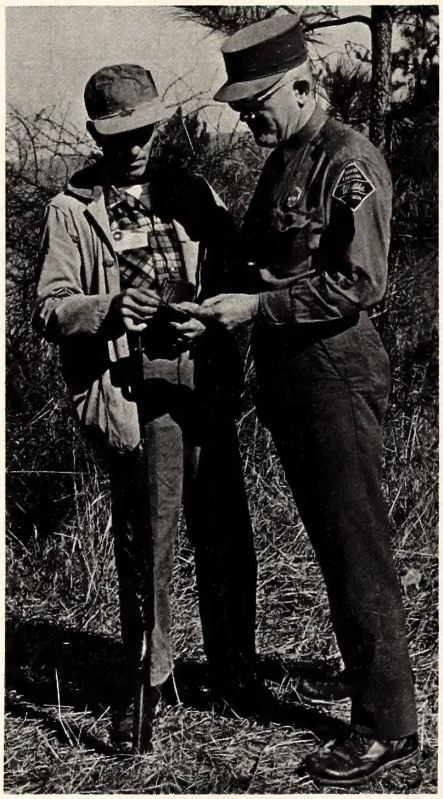
Division of

Protection

AS its part in fulfilling the Commission's objective of "providing more sport for more people with an equal opportunity for all," the Division of Protection had the primary mission of enforcing the State's game and fish laws and regulations. This required field checking an ever-increasing number of hunters, fishermen and trappers to insure compliance with license requirements, seasons and bag limits, and proper methods of taking game and fish. An increasingly important duty was the enforcement of the boating safety laws and regulations, including registration and safety equipment requirements, and supervision of boat races and regattas and other organized water events.

The Mission

During the biennium the collateral duties of the Division were broadened. These duties included a statewide year-long fishing survey for the Division of Inland Fisheries, supervision of minor maintenance of the Commission's public fishing and boating access areas, assistance in establishing such areas and the construction of facilities on them, fishing density surveys on certain bodies of water, fish stocking, game surveys, auditing and collecting delinquent license agency accounts, sales of the Commission magazine, "Wildlife in North Carolina," and administrative and enforcement assistance to other departments of state government.



A wildlife protector checks a hunter's license. Such field activities require long hours at all seasons of the year.

The personnel of the Division of Protection fulfilled an important function in public relations for the Commission during the biennium. In addition to being the Commission's representatives who were most often in contact with the public—thereby serving as the "window" through which the entire wildlife conservation program was viewed—they took advantage of many opportunities to carry the conservation message to the public through such activities as showing films, presenting talks, manning exhibits at fairs, and representing the Commission at a variety of functions concerned with conservation in their local areas. They also fulfilled the very important responsibility of training interested groups all over the State in hunter safety and water safety.

The Means

TO carry out the assigned mission, the Commission maintained a Division of Protection consisting of 156 carefully selected and highly trained men, distributed throughout the State according to density of hunting, fishing and boating activity and to population. These personnel consisted of a Division Chief, an Assistant Chief, a Patrol Pilot, nine Supervisors, nine Assistant Supervisors, twenty-seven Patrolmen, one hundred-twenty Protectors and six Protector Trainees.

THESE personnel were equipped with 150 radio-equipped automobiles and two jeeps, 150 boats ranging from one-man skiffs to 19' outboards, 149 outboard motors ranging from 3 to 100 horsepower, and two PA-18 "Supercub" aircraft. Radio equipment in addition to the mobile units consists of 40 portable two-

In order to do an efficient job of fish and game law enforcement, each officer is supplied with modern equipment such as this compact field radio.

The Commission's two aircraft increase the efficiency of the Division of Wildlife Protection. They fly on a year-round schedule, statewide.

Radio-equipped vehicles provide mobile, fast contact with others on the Protection team. A new radio system provides contact with headquarters and the general public.

way sets, 11 base stations and 16 relay towers. During the biennium 106 specially-built automobiles were obtained. Equipped with heavy-duty springs, shock absorbers, transmissions and differentials, these cars resulted in considerably lower vehicle maintenance costs. Items of personal equipment issued to each man included complete dress and work uniforms, revolvers, holsters, binoculars, handcuffs, and flashlights.

THE Division of Protection continues to utilize the facilities and personnel of the Institute of Government of the University of North Carolina at Chapel Hill in its training program. This program consists of a three-week pre-service school and five in-service schools during which

Instruction provided by the Institute of Government pays off in the field.

were taught such subjects as game, fish and boat law, law of arrest, search and seizure, evidence, first aid, firearms, pursuit driving, defensive tactics, crime scene searches, interview and interrogation methods, moulage, fingerprinting, operational procedures and personnel management. These schools are supplemented by district level training conducted by Division personnel covering topics of particular interest in each district.

The Measure

ACCOMPLISHMENTS in the protection of wildlife and boating public surpassed those of previous biennia by a considerable margin.

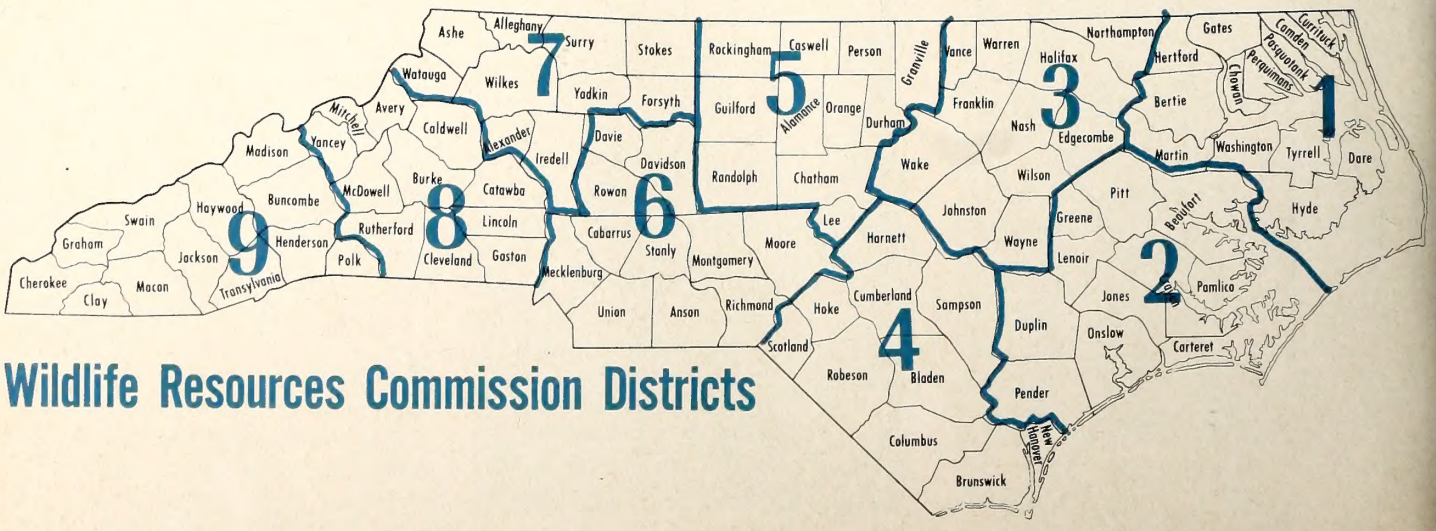
Just prior to the biennium the Division was strengthened by the

addition of twelve men, with a corresponding increase in equipment of one aircraft, ten automobiles and six boats and outboard motors. At the same time the Division was reorganized to distribute the work load more equitably and to facilitate administration. This resulted in an increase of almost eleven percent in the number of hunters, fishermen and boats checked as compared to the previous biennium. The results are indicated in the following tabulation:

	Biennium 1960-1962	Biennium 1962-1964
No. hunters and fishermen checked	679,086	754,823
No. violations found	14,463	17,832
Percent violations	2.13% (1/47)	2.36% (1/42)
No. convictions	13,926	17,318
Percent convictions	96.3%	97.1%
No. boats checked	71,668	76,201
No. of violations found	3,619	3,949
Percent violations	5.05% (1/20)	5.18% (1/19)
No. convictions	3,517	3,843
Percent convictions	97.2%	97.3%

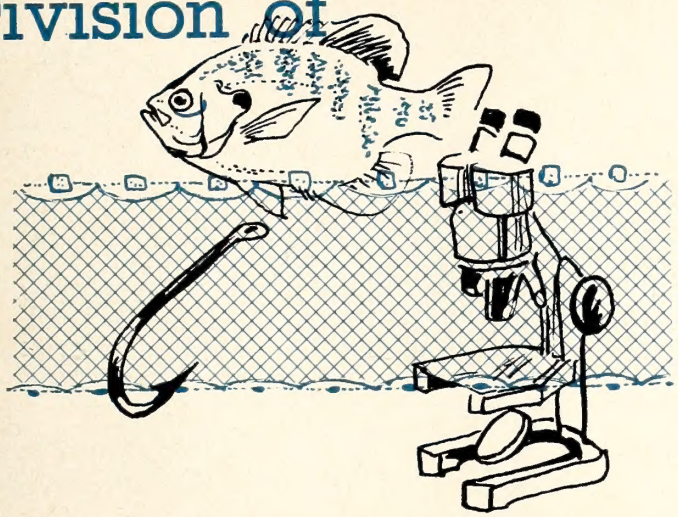
The increased work production indicated above was accompanied by an increase in efficiency of operation. During the second year of the biennium costs of operation of the Division's equipment decreased by 10 percent over the previous year.

Left, Commission pilots check charts in preparation for a day's flying. Cooperation with other agencies is of utmost importance. Above, a wildlife protector and a U. S. Coast Guard Boarding Team member inspect a life jacket. Such cooperative activities were conducted many times during the biennium.



Wildlife Resources Commission Districts

Division of



Inland Fisheries

THE Division of Inland Fisheries carried out a program of research, management, production, and regulation designed to improve the fresh-water fishery resources of the State. Each phase of the program provided information needed to formulate and execute sound management practices.

Biological inventories conducted in lakes, reservoirs, and streams provided the basic framework for the establishment of the management practices that were initiated in various public waters during the biennium.

Stream Survey

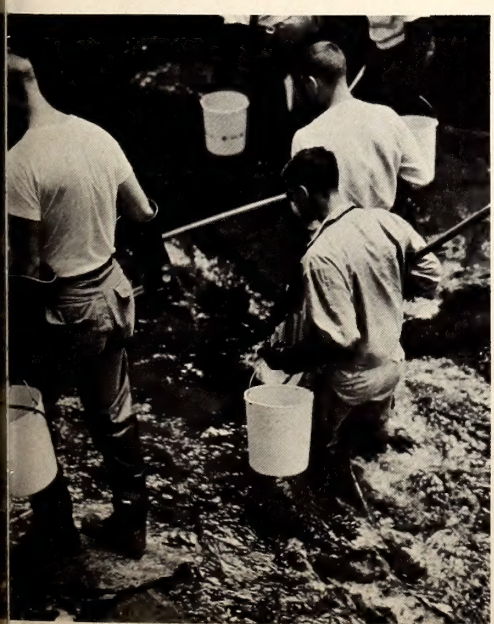
THE Statewide survey and classification of rivers and streams was 75 percent complete as a result of the eight watershed surveys finished during the biennium. Data obtained from the surveys provided a check list of all species of fishes present, a relative measure of the abundance of each fish species and the fish-food organisms, and the classification of all streams on the basis of their faunal, physical, and chemical characteristics.

These data served as background reference material required for effective management of existing fish populations. The information also provided valuable pre-project data on streams that may be impounded in the future, and it assists in evaluating the fishery resource as the need intensifies for the disposal of municipal and industrial wastes.

Some of the conclusions determined from the surveys are as follows:

1. The scarcity of game fish in some streams of the State results from one or more of the following factors: low natural fertility, soil erosion and resulting turbidity, mechanically altered habitat, and pollution from industry, municipalities, and mining operations.
2. Redbreast sunfish (robin) are adapted to a wider variety of habitat than any other game fish in the State, and are the only game fish present in many streams.
3. Rough fish are very abundant in many streams and compete with game fish for food and space. At present, the nongame fishes are not being fully utilized by the fisherman.
4. Small streams generally are much richer in fish-food organisms than are the larger rivers and have higher game fish populations. Fishermen seem to neglect or are unaware of the excellent populations of pickerel, redbreast, warmouth, and flier found in many of the smaller streams.

Fish collected from a stream sample are sorted by fishery biologists. Fish are identified, counted and measured. At left, a crew picks up fish from a chemically treated stream.



NORTH CAROLINA'S MAJOR WATERSHEDS

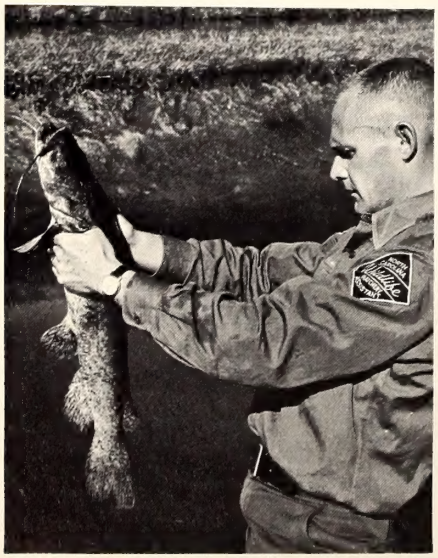
5. Game-fish habitat is of poor quality in many Piedmont streams because they carry a heavy load of industrial, municipal, and silt pollution.
6. The Roanoke bass, closely related to the rock bass, was identified for the first time in North Carolina waters. It furnishes considerable sport in the lower Piedmont streams.
7. Certain streams provide habitat that may be suitable for the introduction of species such as: redeye bass, Roanoke bass, redear sunfish, and the larger species of catfish.
8. The channelization of streams in eastern North Carolina for navigation and for agricultural drainage has seriously damaged the game-fish populations in most instances.
9. The best trout populations are found in streams that have forested watersheds and are above the 1500-foot elevation.
10. Lakes on mountain trout streams warm the water and thereby adversely affect the downstream carrying capacity for trout.
11. Channel catfish support an important fishery in only a few streams of the State.

Inventories and Management

BIOLOGICAL inventories were made in the warm-water impoundments of the Piedmont section and in the cold-water impoundments in the mountain section of the State. Also, a research study was completed in a warm-water power reservoir in the Piedmont section.

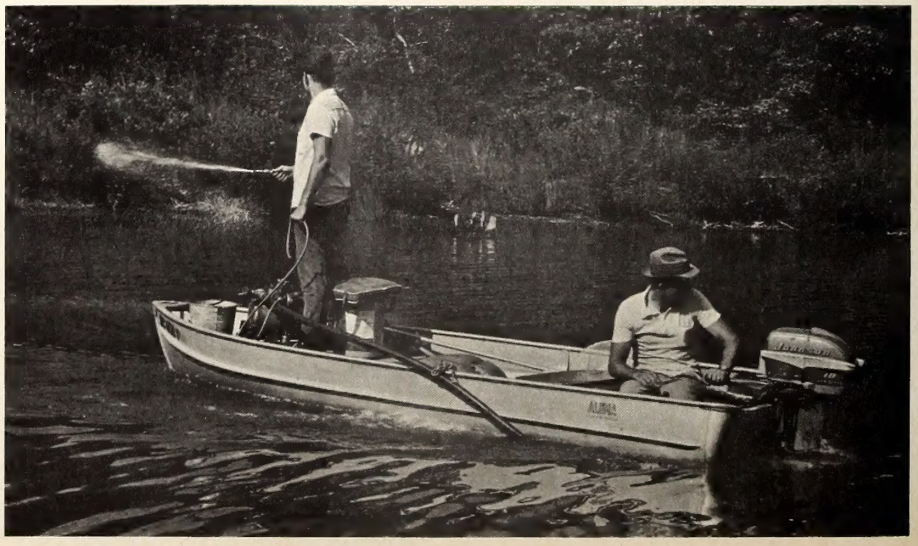
Data obtained from the warm-water reservoir research revealed that additional forage is needed to supply the large numbers of crappie and white bass with sufficient food to provide rapid growth to a size attractive to anglers. Threadfin shad and gizzard shad were introduced into the warm-water impoundments where additional forage was needed.

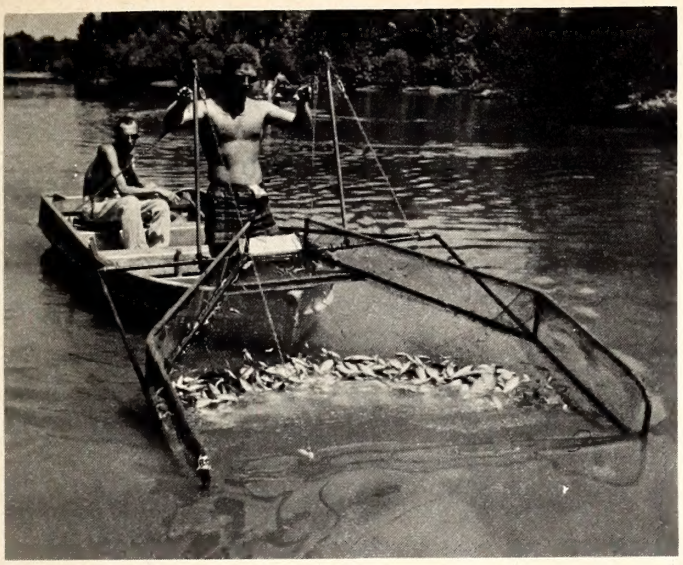
Biological inventories in several other warm-water impoundments revealed an abundance of forage species that were not being utilized by existing predator fish. Additional predator species, including white bass and sauger,



The flathead catfish may have promise in some of our larger streams. Under ideal conditions, it reaches over 100 pounds.

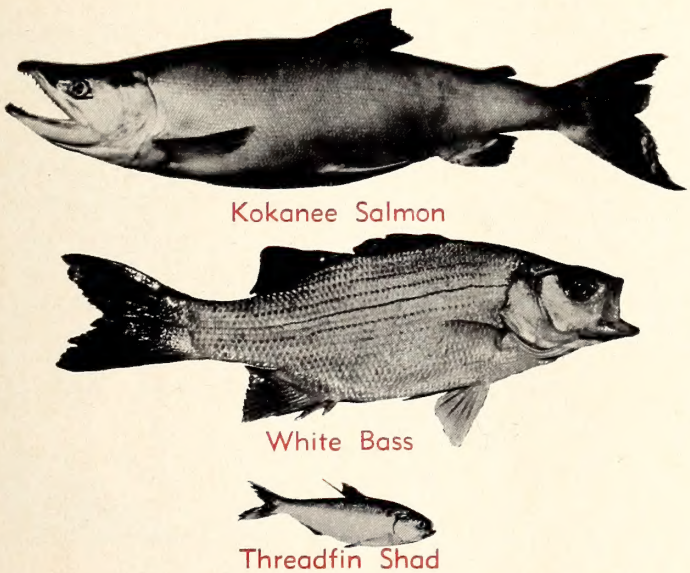
Here, a fish biologist sprays liquid rotenone over the sampling site in order to collect fish for inventory study. This is the first step toward prescribing fish management techniques.





Fish that surface during the rotenone sample are picked up in various ways. Here, a special "fish scoop" designed by Commission personnel is used during operations on High Rock Lake.

A fish biologist analyzes the quality of water during a lake survey. Water analysis is very important in checking for possible pollution or other factors affecting fish.



At left, top to bottom, are the kokanee, white bass, and threadfin shad. Above is a photo of the sauger. All these fish have been introduced into suitable Tarheel waters.

were introduced into some of these waters to utilize the abundance of food and thereby increase the production of fish desirable to the angler.

Studies conducted in the small, infertile Sandhills lakes indicated that a largemouth bass-bluegill population cannot support a substantial fishery. Further studies will be necessary to determine means by which fishing can be improved in these waters.

A population of sunfish, too small to be utilized by fishermen, developed in several of the cold-water impoundments in the mountains and was in direct competition with trout populations in these waters. Studies conducted during the biennium indicate that undesirable sunfish can be controlled, without harm to the trout population, by marginal poisoning of these waters during late summer.

Kokanee were introduced into a cold-water reservoir in western North Carolina. These annual stockings were continued during the biennium because a minimum of four year-classes are necessary to provide a continuing population of spawning adults. Kokanee normally mature in four years and the adults die after spawning.

The sport-fishing resources of the State were increased, during the biennium, by approximately 60,000 surface acres resulting from the construction of four major reservoirs which are open to public fishing.

Trout Management

APPROXIMATELY 2,000 miles of mountain trout streams in North Carolina are open to public fishing during the trout season. About 1,000 miles of these waters are on privately-owned land and are open to the public by an agreement with the land owners. The other 1,000 miles of trout streams are on publicly-owned land controlled by the State of North Carolina, the U. S. Forest Service, and the U. S. Park Service.

A coordinated stocking program for the trout waters open to public fishing is carried on by the State and Federal hatcheries. Approximately 50 percent of trout stocked each year are provided by Federal Hatcheries.

Of the 1,000 miles of publicly-owned trout water, about 300 miles are located within the Wildlife Management Areas. Twenty-two miles of these managed waters were renovated during the biennium. A barrier was constructed on each of the streams renovated to prevent upstream migration of undesirable fishes and the fish populations above the barriers were removed with the use of rotenone. The renovated streams were restocked with a typical trout population and designated as "Native Trout Water." The renovation projects completed during the biennium increased the amount of renovated streams within the Wildlife Management Areas to 52 miles.

Fishing in "Native Trout Water" is restricted to single-hook artificial lures, with a 5-fish creel and a size limit of 9-inches for rainbow and brown trout, and a 6-inch size limit for brook trout. As long as the creel limit is not exceeded, the angler may catch as many fish as he wishes, but must return to the water unharmed those fish less than the prescribed size limit.

Barriers, similar to this one, are constructed on the streams to be renovated. They prevent upstream migration of undesirable fish such as suckers, catfish, and the small sunfish.

Small Watershed Projects

FOR some time, fishery workers have realized that alteration of habitat caused by channelization of natural stream beds to obtain better drainage and to reduce flooding of surrounding croplands was detrimental to indigenous fish populations.

In North Carolina alone, for example, 235 watersheds have been deemed feasible for assistance under Public Law 566. A total of 62 watershed improvement project applications involving some 2,900,000 acres already have been authorized for planning, and 400 miles of streams have been altered or are under construction at the end of the biennium. In addition to Public Law 566 projects, many miles of streams have been altered by other agencies and individuals.

When these channelization projects are considered individually, the losses to the fishery resource often appears insignificant because they usually affect small streams. This concept is very misleading in light of the com-

These two photos might be called "before" (left) and "after" on a renovated stream. Good trout populations are restored.

Of growing concern is the channelization of Tarheel streams. This photo shows what happened to one fish-producing stream.

pleted surveys of streams in North Carolina which demonstrate that the small, black-water streams of eastern North Carolina produce some of the best game-fish populations to be found in the State. Even if these streams are not so valuable individually, collectively they represent a sizeable portion of the public fishing waters. The detrimental effects of excessive siltation and the more rapid water-level fluctuations in the receiving waters downstream also must be considered when channelization of the magnitude described above is encountered.

Studies of coastal streams conducted during the biennium indicate that reductions in the magnitude of 90 percent occurred both in weight of game fish per acre, and in number of game fish exceeding six inches total length per acre, following channelization.

The data collected also reveal that no significant return toward the natural stream population occurs within a 40-year period following channelization.

Cape Fear River American Shad Studies

THE Cape Fear River at one time was one of the major American shad producing waters of North Carolina. Construction of three navigation locks during the early 1900's denied spawning shad the use of the entire Cape Fear above Lock No. 1 which is located a short distance upriver from Acme, North Carolina. The commercial catches of shad dropped soon thereafter in proportion to the area of spawning ground that was lost.

In 1962, the Division of Inland Fisheries and the U. S. Fish and Wildlife Service jointly undertook an informal preliminary investigation into the feasibility of passing the spawning runs of American shad into the upstream river reach by the repeated operation of Lock No. 1 when adult shad were in the immediate vicinity. The preliminary study indicated that the method showed great promise in returning the shad to their ancestral spawning grounds.

As a result, a formal inter-agency study of the locking technique on a somewhat broader scale was begun in 1963.

Studies in 1963 and 1964 indicated (1) an estimated 3,208 American shad, 9,638 glut herring, and 24 striped bass were passed upstream in the 261 hours that Lock No. 1 was operated for fish passage; (2) successful spawning by shad occurred throughout the river to the limits of migration; (3) survival and growth of young shad throughout the 70 miles of river between Locks 1, 2, and 3 appeared to be excellent, with as many as 37 juveniles, ranging from 50 to 60 millimeters fork length by mid-August, taken in a 10-minute surface trawl; and (4) the locks and dams were not a deterrent to downstream migration of young shad in the fall.

It appears that the restoration of the spawning runs of anadromous fish above the locks in the Cape Fear River will increase future populations proportionately to the increased spawning area provided, and these increased populations will support the expansion of both sport and commercial fishing.

American shad have been brought back to the inland waters of the Cape Fear River by planned operation of the locks.

Coastal Studies

COMPLETED during the biennium was the Inter-agency study on Back Bay-Currituck Sound, which was conducted to determine the cause of the decline in waterfowl use of the area and to formulate management practices which would increase waterfowl usage while retaining or increasing the fresh-water game-fish populations.

The study revealed that the decline in continental waterfowl populations and insufficient waterfowl food production are the primary factors that limit waterfowl use of the area. An increase, up to 10 percent of sea-water strength, in the salinity content of the Sound water probably would result in an increase in aquatic vegetation. Laboratory and field studies revealed that salinity levels in excess of 10 percent of sea-water strength would detrimentally affect the excellent fresh-water fish populations in the Sound.

Pollution

THE investigation, evaluation, and positive identification of the causative factors of fish-kills, by pointing out where water pollution originates, forms a very effective approach to pollution abatement. In time, it may save more water for fishing than all other fish-management tools combined. The general public has

recognized this unnecessary loss of fish.

Senate Bill 409, the so-called "Fish-Kill Bill", was ratified June 21, 1963 by the North Carolina General Assembly. This law was passed as a result of mounting public resentment against the unnecessary destruction of fish by pollution and by a very disastrous fish-kill in the Roanoke River. An estimated 50,000 fishes, including some 20,000 striped bass which were on their way to their spawning grounds, were killed in approximately 100 miles of the Roanoke River downstream from Roanoke Rapids.

The Wildlife Commission now has added responsibilities in preventing fish-kills such as this one on the Roanoke River.

The law provides the legal means by which the replacement value of fish killed by pollution may be recovered from the polluter. The Wildlife Resources Commission has the responsibility of determining the replacement value of the fish killed by pollution in the inland water of the State. The North Carolina State Stream Sanitation Committee has the responsibility of determining the source of pollution causing the kill and the immediate causative factor. To effectively carry out these responsibilities, a cooperative Statewide "fish-kill" alert system has been placed into operation to insure prompt, efficient, and coordinated investigations of all fish-kills occurring in the inland waters of North Carolina.

Hatchery Production

DURING the biennium, the State hatcheries produced 649,672 yearling trout, 827,894 fingerling trout, 351,119 Kokanee salmon, 1,065,449 largemouth bass, 193,700 smallmouth bass, 1,821,323 bluegill, 21,500 rock bass, 785,300 redear, 949,500 redbreast, 250 hybrid catfish, and 11,024,000 striped bass fry.

In addition, 764 adult white bass, 9,250 adult threadfin shad, and 325 adult sauger were relocated from other sources in hatchery distribution trucks and released in public waters.

A new laboratory-workshop building was completed at the Fayetteville hatchery for the conduct of water quality studies. Two new 25-foot circular pools were constructed at the Marion hatchery to replace four concrete raceways that had disintegrated beyond satisfactory repair. At the Armstrong hatchery, six 30-foot circular pools were completed to hold the station brood fish.

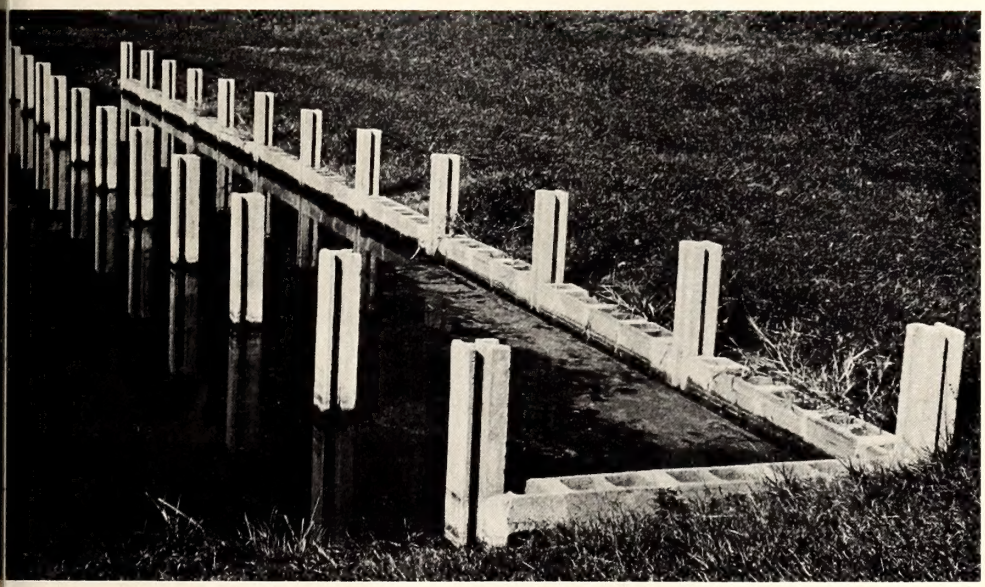
Research in the propagation of channel, blue, and flathead catfish was initiated at the Fayetteville and Table Rock hatcheries. Experiments with the rearing of striped bass fingerlings continued at the Fayetteville hatchery. Research is being conducted at the trout hatcheries in the development of cheaper, but nutritionally adequate, diets. The food cost for producing one pound of trout averaged 26½ cents during the biennium. Brood stock of the three species of trout propagated are being developed by selective breeding.

The striped bass hatchery is located near Weldon on the Roanoke River just below the US-301 highway bridge. This hatchery operates on a seasonal basis during the striped bass run, usually opening in late April and closing in early June.

The two warm-water hatcheries, Fayetteville and Table Rock, are located at Lake Rim on US-401 highway near Raeford,

A modern tank truck is loaded with bass fingerlings for distribution to waters which are open to public fishing.

This is the new laboratory-storage building at Fayetteville. Below are warm-water fish propagation pens constructed in a hatchery pond.



At right is a scene from the Wildlife Commission's access area on Lake Waccamaw.

and just off NC-181 highway 15 miles northwest of Morganton, respectively.

FIVE hatcheries produce brook, brown, and rainbow trout. Roaring Gap hatchery is located at Roaring Gap, off US-21 highway, between Elkin and Sparta. Pineola hatchery is located in the town of Pineola off of US-221, about 4 miles south of Linville. Armstrong hatchery is located 15 miles north of Marion off NC-226A highway near Little Switzerland. The Marion hatchery is located 5 miles west of Marion off US-221 highway on the Hankins Road. Waynesville hatchery is located at Balsam about 6 miles west of Waynesville on US-19A highway.

Other Activities

IN addition to their primary responsibilities of management of the fishery in the public waters, the fishery biologists rendered a great variety of services to the sportsmen of North Carolina. During the biennium, 86 scientific and popular articles were published to keep other workers and the public informed on recent findings and investigations. The biologists participated in various Division schools and training programs, gave advice to 356 pond owners on problems of pond management, and presented numerous programs and talks to sportsmen's groups, youth groups, civic clubs, and news media.

Biologists also acted as advisors to many State and Federal agencies in problems associated with our inland fisheries by joining in special studies of immediate importance such as the Cape Fear River shad study, studies associated with stream channelization, and the effects of small dams on trout streams.

Aside from their direct work with fish populations, an important service of the biologists consisted of locating suitable sites for Boating and Fishing Access Areas. These areas, which consist of off-the-road parking facilities for cars and trailers as well as launching ramps for small boats, were constructed to enable fishermen to utilize the more inaccessible fishing waters of the State. (See Division of Engineering) They have the effect of greatly increasing the fishing potential available to the sportsmen.

Regulations

FISH regulations are one of the major tools fish biologists use in managing the fishery in public waters.

There is a standard procedure used in preparing regulations as a management technique. First, the biologists, through research and surveys, determine the number and species of fish in the various waters, and also collect

A youth group is shown what is in a pond. Fertilization recommendations are carried out (right). Public hearings on fishing regulations are held each fall.

other information such as age and growth of the fish. Second, this information is supplied to the Commission in the form of proposed regulations, for their consideration in specifying the time, methods, and quantity of fish which may be taken. Third, a series of public hearings is held to provide the fishermen an opportunity to voice their opinions concerning the proposed regulations. Fourth, the eleven-man Wildlife Resources Commission meets and considers the recommendations of the biologists and the public. It is then their responsibility to weigh all the facts and pertinent information at hand and to establish fishing regulations that are biologically sound and also acceptable to the public.

Fish Stocked from State Hatcheries, 1962-63 1963-64

TROUT AND SALMON

Species	1962-63			1963-64		
	Yearlings and older	Fingerlings	Pounds	Yearlings and older	Fingerlings	Pounds
Brook trout	122,272	267,632	36,763	134,215	103,750	37,970
Brown trout	37,765	4,727	7,526	34,085	4,000	7,893
Rainbow trout	177,546	226,115	52,834	143,787	221,670	32,264
Kokanee		214,319	63		136,800	137
TOTALS	337,583	712,793	97,186	312,087	466,220	78,264

WARM-WATER FISHES

Species	1962-63	1963-64
Largemouth bass	577,367	488,082
Smallmouth bass	33,200	160,500
Bluegill	939,243	882,080
Rock bass	21,500	0
Shellcracker	445,000	340,300
Redbreast sunfish	265,000	684,500
Hybrid catfish	0	250
TOTALS	2,281,310	2,555,712

ANADROMOUS FISH (Released as Fry)

Species	1962-63	1963-64
Striped bass	4,881,000	6,136,000

RELOCATIONS

Species	1962-63	1963-64
White bass	454	310
Threadfin shad	6,250	3,600
Sauger	325	0
TOTALS	7,029	3,910

Division of Game

THE primary function of the Division of Game is to provide the technical wildlife management know-how for the production of optimum populations of game animals for the hunters of North Carolina. The Division also supervises the production and harvest of game on 25 wildlife management areas.

Small Game

Quail, rabbits and squirrels absorb about 70 percent of all the hunting effort in North Carolina. These species are naturally distributed over the entire state but their numbers vary with local conditions of food and cover. Landowners wishing to increase populations of small game on their lands are assisted by the Commission's District Biologists who examine the property and advise landowners how to overcome food and cover deficiencies. Biologists also accept landowners' orders for planting materials which are helpful in overcoming these deficiencies and which are provided by the Commission free of charge.

PRODUCTION of planting materials is therefore a major function of the Wildlife Resources Commission and thousands of seedlings and pounds of seed are produced each year at the Commission's nursery. During the past two years, the number of cooperators receiving planting materials was 22,080, an average of more than 110 per county per year. During this two-year period the following amounts of planting materials were provided: 2,106,400 multiflora rose seedlings, 12,959,000 shrub lespedeza seedlings, 8,548 two-pound units of shrub lespedeza seed, 21,635 two-pound units of sericea lespedeza seed, 43,709 five-pound units of a combination seed mixture, and several hundred units of new experimental seed mixtures.

Effectiveness of the program is attested by the steadily increasing number of cooperators and by observation of concentrated wildlife use in and near the plantings.

Changing trends of land use and ownership vitally affect the wildlife production picture. People moving off the land to the cities has decreased the number of farm units from 289,000 in 1949 to 175,000 in 1962. There has been a corresponding increase in size of individual farm ownerships and increased mechanization. To keep up with this trend, the seed distribution portion of the small game program has been considerably expanded since planting by seed (as opposed to seedlings) is better suited to tractor farming.

Development of public utility rights-of-way for wildlife was substantially advanced during the biennium with a demonstration program in which several of the major power companies participated. Various types of plantings were made on various soil types in coastal plain, piedmont and mountain counties to test their effectiveness in stabilizing soils, reducing cost of periodic clearing, and increasing production of wildlife.

THE designated dove shooting area program was expanded to 21 areas during the biennium in response to public demand. While most of the areas provided good

Shrub lespedeza seed is harvested at the Sandhills Area nursery for free distribution to landowners.

Plantings of wildlife food and cover along public utility rights-of-way increase small game habitat.

shooting, even the less successful ones elicited favorable hunter response since they provided the increasing army of nimrods with places to shoot where they could feel welcome. Lease arrangements, which formerly compensated the landowners for dove-attracting millet plantings only, were expanded to include use of cut silage fields.

The raccoon trapping and transplanting project was continued during the biennium and a total of 2,689 animals was provided at half-cost to coon hunters in the western part of the state where they were to restock depleted habitats. In another cooperative program, youth groups all over the state were reimbursed at the rate of one dollar each for erecting 2,184 squirrel nest boxes.

Waterfowl

Two highly significant developments in the waterfowl picture during the biennium were the discovery that certain federally sponsored drainage projects in eastern North Carolina were destroying thousands of acres of important waterfowl habitat, and the completion of the Pamlico Point waterfowl impoundment.

WHILE highly beneficial to game in most other parts of the state, it was observed that Public Law 566 small watershed projects completed in the Coastal Plain were having a devastating effect upon waterfowl habitat through drainage of hardwood swamps. Several meetings were held with personnel of the various agencies concerned in an attempt to alleviate this damage. While some progress was made, much more effort will be required to properly inform landowners of the importance of swamps not only for the the protection of wildlife but also for the production of high quality timber, replenishment and storage of ground water, and prevention of floods and forest fires.

The second development of particular significance was the completion of a cooperative saltmarsh mosquito control-waterfowl development impoundment on Pamlico Point of the Goose Creek Wildlife Management Area. Done in cooperation with the Pamlico County Health Department and covering an area of about 800 acres, the purpose of the project was to demonstrate that the thousands of acres of privately-owned saltmarsh along the Carolina coast could be greatly improved for waterfowl while ridding them of the pesky saltmarsh mosquito.

Conventional control of this pest has been by marsh ditching, which does not necessarily improve the area for other uses. By constructing dikes instead of ditches, and installing two 24-inch pumps and interconnecting gates, this 800-acre marsh started attracting waterfowl by late summer. The primary attractant was the abundant food in the shallow

Needlerush, which provides no food for waterfowl, is burned off at Pamlico Point prior to flooding and planting of food-producing aquatic plants to attract ducks and geese.

impoundments, some of which was introduced but much of which grew naturally. The original rough vegetation, mostly needlerush and sawgrass, was removed by a carefully controlled burn.

The area is open to hunting during the regular season and indications are that it will receive substantial public use. But the primary value of the area is as a demonstration to other landowners to show how "worthless" marsh can be impounded and converted to productive wildlife habitat, and at the same time eliminate its production of salt-marsh mosquitoes.

Another important, if less exciting, function of the waterfowl program is maintaining inventories of overwintering waterfowl and hunter harvest. Overall, about 75 percent of the state's ducks and coots, and 90 percent of the geese winter in the Coastal Plain. Aerial census flights indicated an overall decrease of about ten percent, as compared with the previous biennium, for an average of about 400,000 birds each winter. Duck bags decreased slightly to about 50,000 and the goose kill increased slightly to about 20,000.

Wild Turkey

Wild turkey restoration efforts were substantially advanced during the biennium through the employment of a biologist with several years experience working with this bird. Initial efforts were devoted to trapping and transplanting of birds on management areas in the western part of the state.

Restocking was accelerated by a deer-for-turkey exchange worked out with the State of Florida. All of the birds secured in this exchange were placed on the Mt. Mitchell area since it is one of the few areas which has been completely devoid of wild turkeys for many years. Several broods of young were observed during the past summer, thus providing initial indications of success.

In order to develop a sound basis for future management and restoration, several studies were initiated. One survey secured information on population status in each of the state's 100 counties. Another study is being designed to secure information on food habits. Through other more intensive local studies it is hoped that reasons for low populations will be determined and techniques for improvement developed.

Big Game

In the western part of the state the Commission's big game program is largely centered about its wildlife management areas. As a result of an intensive protection and development program, most of these areas serve as big game reservoirs which provide an overflow to surrounding territory.

Wild turkey brood stock being released on the Mt. Mitchell Area. These vigorous birds were obtained from Florida and have helped accelerate the turkey restocking program.

The wildlife management areas are intensively managed for big game. These lands are marked with signs like this.

Healthy populations and weather favorable to mast production and early rut, combined to bring deer kills to record high levels during the biennium. It is quite likely that peak levels have been attained on some of these areas and that periodic drops in population level can be expected on some of them. We are fast approaching capacity production and harvest on these areas. Continued increase will require more land and new areas.

In the eastern part of the state, deer distribution is correlated with distribution of swamps and pocosins which provide protection. The high populations of deer on these protected areas are in marked contrast to the vastly more extensive reaches of the state which support very few big game animals even though they have ideal food conditions. This situation continues to emphasize the tremendous unfilled capacity of North Carolina to produce more big game—particularly deer and wild turkey.

As shown in the table of state-

wide game kills, the harvest of deer in 1962 was estimated to be about 30,000. This number could be increased several times with an intensified and expanded program of protection and land acquisition.

An important aspect of deer management during the biennium was expansion of either sex deer hunting on non-management areas, i.e., privately-owned lands. During the first year of the biennium 16 such areas were designated and 18 during the second year. Establishment of either sex deer seasons is an important public relations tool which wildlifers can use to demonstrate their willingness to protect landowners' interests by controlling deer herds. Exercise of such self-restraint increases landowner confidence in and willingness to cooperate with those who wish to expand the wildlife program.

A few developments on the wildlife management areas during the biennium are especially worthy of mention. A rather ambitious, if not outright spectacular program of water level control was initiated on the Holly Shelter area. This program calls for reduction of water levels by a series of canals along the south and west sides of Holly Shelter bay with hope of increasing productivity of timber and wildlife. It also calls for construction of a large central impoundment by means of a waterlevel control gate on Ashe's Creek and conversion of several of the elliptical bays on the south side to open water for waterfowl by draining and burning. While much of this work is experimental in nature consultation with professional authorities in the fields of drainage and plant ecology support anticipation of practical results.

Other accomplishments worthy of note include completion of the boundary line survey around the Gull Rock Wildlife Management Area in Hyde County. This long overdue project was completed with the help of the Area Redevelopment Program. Other work accomplished under the same program included construction of an equipment shed on the Standing Indian area and two plant and seed production buildings on the Sandhills area.

GAME KILL AND HUNTER SURVEY, 1962-63

Species	Total Kill	Total Number of Trips	Total Number of Hunters
Squirrel	2,396,579	237,843	1,621,022
Quail	2,327,054	141,590	1,037,235
Rabbit	2,181,212	230,641	1,621,482
Dove	1,513,703	90,797	455,059
Opossum	187,614	28,877	161,465
Raccoon	147,326	40,334	286,699
Duck	92,082	19,583	89,934
Grouse	77,625	17,017	33,611
Fox	34,582	16,852	144,656
Deer	28,808	87,996	527,577
Woodcock	24,824	4,312	17,362
Goose	24,042	9,001	51,948
Turkey	1,755	6,676	21,464
Bear	1,627	5,679	40,913

Accurate records of game harvest are useful in planning wildlife production and management activities.

Forestry

Since several of the wildlife management areas are on lands owned by the Commission and since these areas are largely wooded, management of these forests in accordance with established principles of forestry is an important function of the Division of Game.

AFTER several years of work, inventory has been completed on the largest of our holdings, the Sandhills Wildlife Management Area. Stands have been mapped as to type and site index, growth rates measured, and allowable cut computed so as to provide for maximum production consistent with capacity of the land to produce. Substantial progress has also been made on the inventory and plan for the Caswell area and

Coordination of forest and wildlife management on Sandhills area provides for maximum production of timber and wildlife.

similar studies are planned for the other tracts.

Timber sales were made on several areas and 15 percent of the gross income from sales was returned to the counties as required by law. Pine straw sales increased on the Sandhills area where seven such sales were made during the biennium for a total income of $2,560. Income from timber sales on all areas during the same period amounted to $263,152.16.

Research

Conducting surveys of game populations and kill, and developing new and more efficient methods for conducting such surveys were important activities of the Division of Game during the biennium.

One of the most significant developments was the installation of data processing equipment for handling magazine subscriptions and license accounts. While transition to this type of accounting is not yet complete, equipment on hand allowed completion of a state-wide game kill survey in a fraction of the time and at a fraction of the cost of previous surveys.

STUDIES of deer populations on wildlife management areas continued, with emphasis on reproductive rate and age class composition. An important "break through" in methodology was the development of a tool and technique for removal of jawbones without defacing the cheek. It is hoped that this will provide a means of securing accurate age information on a significant portion of the herd and thus help predict population levels and needed harvest intensity.

The deer adrenal gland study continued to show a relationship between size of gland and density of population but numerical criteria have yet to be established. Study of reproductive rates as measured by ovarian scars were correlated with embryo numbers. These data were further checked against numbers of young as revealed by family group counts.

A study of quail food productivity on the Sandhills bird dog field trial area was initiated to determine the influence of various habitat management techniques. This study will be continued over a period of at least three years so as to coordinate with the controlled burning program.

The production and utilization of forage produced by various pasture plantings was studied. Production was found to be related to pattern of planting but utilization by deer and turkeys was heaviest on plantings having the most recent application of fertilizer.

Study of quail taken by hunters on areas improved with Commission-distributed planting materials indicated that two-thirds of the winter diet of these birds came from plantings. Study of agricultural crops as game food indicated that soybeans, corn and Korean lespedeza offered the greatest potential for quail and rabbits.

Bird dog field trials are one of the many uses made of the Sandhills Wildlife Management Area near Hoffman.

WILD TURKEY STOCKING—DATE AND NUMBERS STOCKED

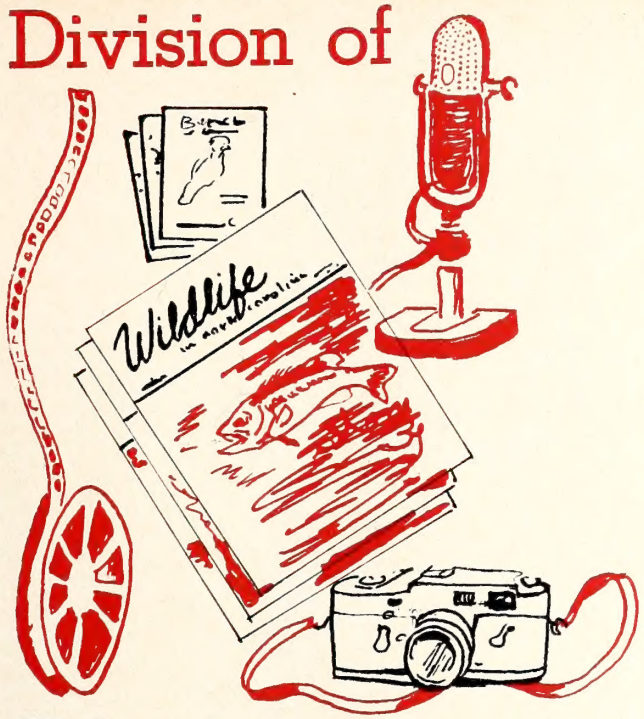
RELEASE SITE	1953	1954	1955	1956	1959	1960	1961	1962	1963	1964	TOTALS
Flat Top	9	2	2							6	19
Thurmond Chatham			2	17							19
South Mountains				20							20
Harmon Den					6		5				11
Daniel Boone								1	9	8	18
Mt. Mitchell										26	26
										GRAND TOTAL	113

This diverse array of equipment is used in habitat development and wildlife protection on Commission-managed areas.

HARVEST OF GAME ON MANAGEMENT AREAS—1962-63 AND 1963-64

Area	Bear	Boar	Deer	Squirrel	Grouse	Raccoon	Rabbit	Quail	Dove	Ducks	Geese
Santeetlah	8-19	22-24	19-30	156-81	12-7	19-11					
Fires Creek			89-164	7-21	198-49	13-19					
Standing Indian			227-251	10-57	164-109	17-13					
Wayah Bald			64-64	7-20	83-41	10-3					
Sherwood	8-12		116-94	10	66-15	14-3	81-31				
Pisgah	13-22		511-725	670-3360	74-39	81-116	2-11	12-6			
Harmon Den	2		29-41	40-179	5-8						
Rich Laurel	-1		78-85	60-250	18-23						
Flat Top			90-146	40-358	26-20	20-7					
Mt. Mitchell			253-355	27-121		6-4					
South Mountains			29-26	172-89	-2	5-7					
Daniel Boone			469-501	654-1026	6-6	38-13					
Thurmond Chatham			76-68	15-37	2-1	-1		2-4			
Uwharrie			227-53	261-99							
Sandhills			40-19	-6			26-47	1216-1112	4593-15511		
Holly Shelter	2-1		54-61								
Croatan	1		13-9					16	3		
Mattamuskeet										1908-1779	3933-2614
	34-55	22-24	2384-2692	2129-5704	654-320	223-197	109-89	1246-1122	4596-15511	1908-1779	3933-2614

Division of Education



UNLESS the people of North Carolina are informed of the need for the wise use of our wildlife and other renewable natural resources, and unless they cooperate actively in the wildlife conservation program, little progress would be made in this field of endeavor.

Informing people of these needs and securing active participation in wildlife conservation practices was the primary function of the Division of Education. It is pleasing to report that considerable progress has been made along this line through six major activities: Publications, press relations, (including newspapers, radio and television stations), visual aids, motion pictures, hunting and boating safety, and field extension.

Formal news releases were distributed to newspapers, and radio and television stations as frequently as happenings in the field of wildlife conservation occurred. This type of distribution was considered to be more effective than regular periodic releases, since editors recognize for the most part that an unscheduled news release from the Commission constitutes news rather than a propaganda handout.

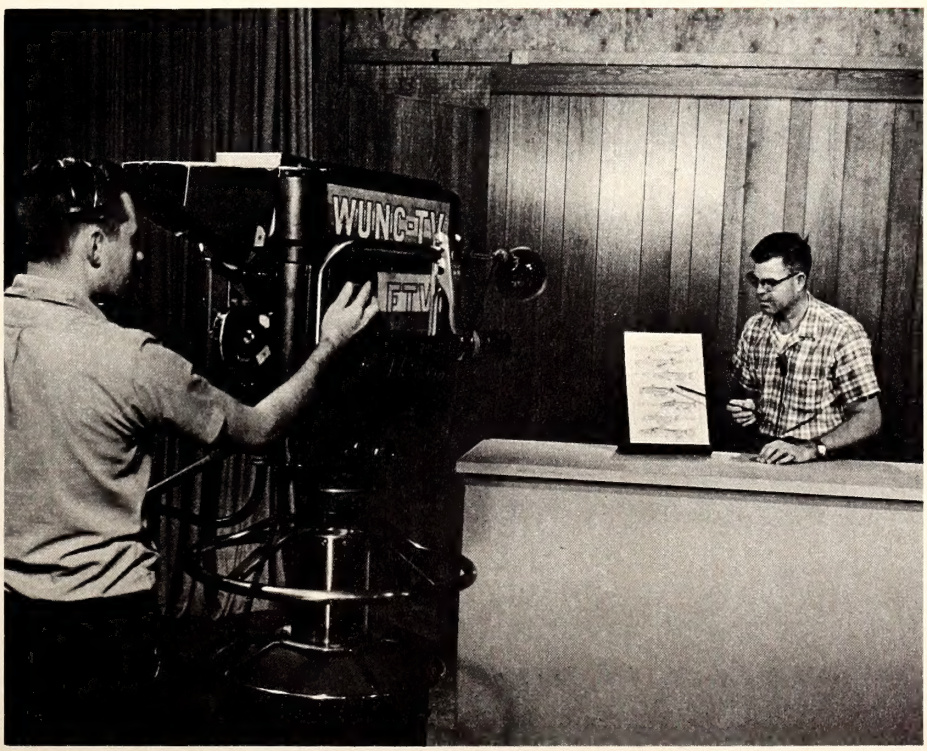
These formal news releases were supplemented by a weekly feature release to some 65 news outlets under the title "Rod and Gun."

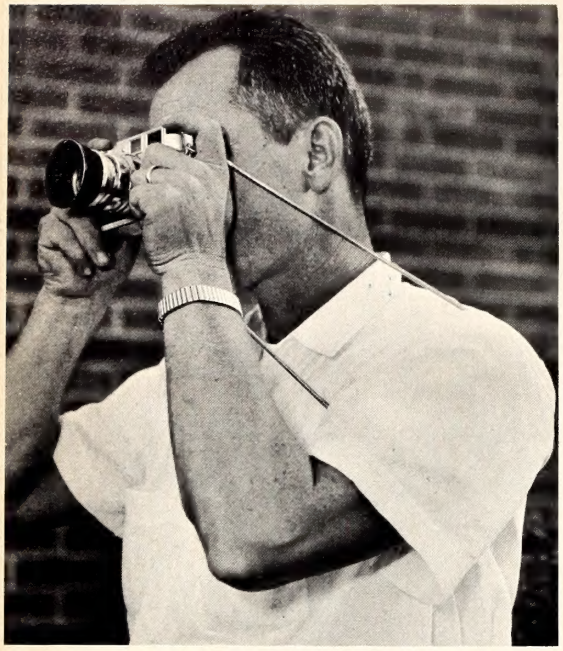
ALTHOUGH no regular television programs were produced, division personnel made frequent appearances on educational television programs. In addition to these, a weekly seven and one-half minute radio program was produced, and with the cooperation of the Radio-Television department at N. C. State College, was distributed to an average of 54 radio stations throughout the state. Time for airing the program was donated by the stations at an estimated value of $1,620 per week or a total of $168,400 worth of free broadcast time during the biennium. Most cooperating stations returned the recording tapes for re-use. A portable, battery-operated tape recorder was used to produce the master tape for the programs in the Commission's offices, thus saving the cost of professional studio production.

THE magazine *Wildlife in North Carolina* continued to be the major educational publication. Monthly circulation grew from 73,000 at the beginning of the biennium to 85,000 at the close. Circulation was increased by two subscription campaigns conducted by field and office personnel of the Commission.

Other publications included 300,000 copies each year of the

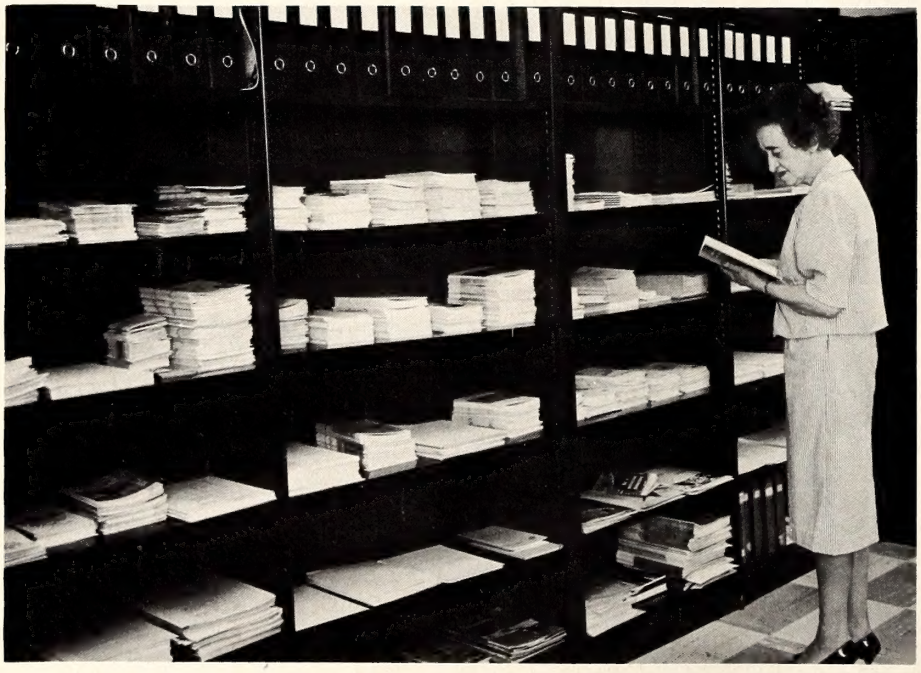
Television appearances by Division of Education personnel increased in frequency and popularity with the viewers.

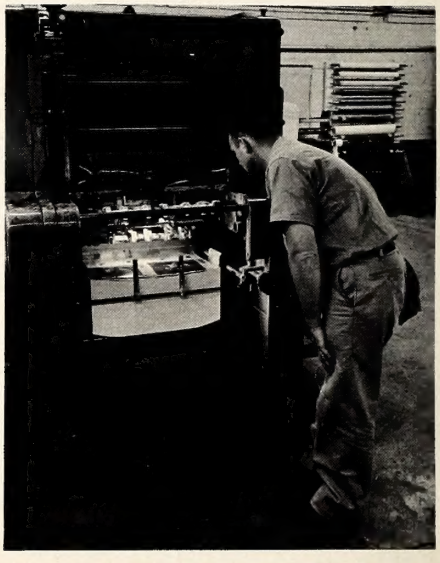




Providing photographs of wildlife subjects is an important Division function.

By the end of the biennium, plans were completed to convert magazine circulation procedures to a modern, data-processing system.





Circulation reached a new high for the Commission's monthly magazine, Wildlife in North Carolina, and requests for pamphlets and information increased.

general fishing and hunting regulations, plus 75,000 copies of rules and regulations pertaining to boating. To answer some 25,000 requests for information on wildlife and wildlife conservation, a library of pamphlets on various fish and game species was maintained for distribution to schools and individuals requesting this type of information.

WORK in the field of visual aids includes the maintenance of a library of 32 motion picture films with a total of 110 prints for free distribution to schools and any organized groups requesting them. These films were in year-around demand, and although audience records were not maintained it could be reasonably estimated that over 400,000 people were reached via this medium.

Several sets of 35 mm. color slides were produced as an aid to promoting wildlife conservation education. These proved to be especially valuable to wildlife protectors and other field personnel in presenting programs to schools and various civic organizations.

With the growing demand for

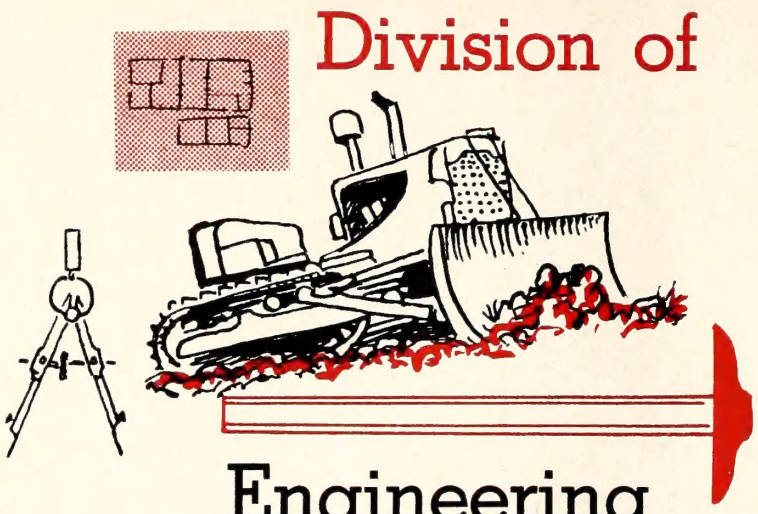
black and white photographs to illustrate magazine and newspaper articles, photography continued to be a major activity in wildlife education work. The Commission now maintains a file of nearly 2,000 black and white photo negatives and some 5,000 color transparencies on almost every conceivable phase of wildlife conservation. Cutting and editing was completed on a new 27-minute motion picture production on the subject of young wildlife species. This was scheduled for distribution in late 1964.

DURING the biennium increased emphasis was placed on hunting and boating safety. Although North Carolina has maintained an admirable record where hunting and boating accidents are concerned, these are basically recreational. Accidents involving them could be expected to rise in proportion to the number of people engaging in these sports. Although statistics were incomplete at the end of the biennium, there were indications that work in this field had kept hunting and boating accidents to a reasonable minimum.

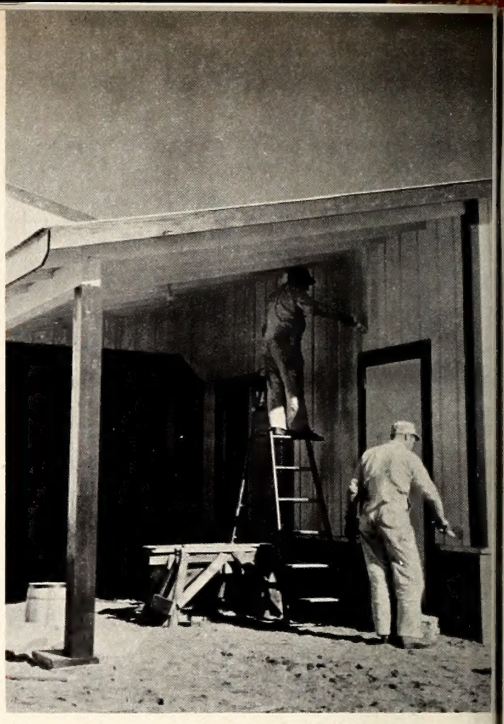
Personnel of the Division of Education worked closely with schools, youth groups, wildlife clubs, civic organizations and other groups in presenting motion picture films, color slides and lectures on the subject of wildlife conservation. This work was aided significantly by office and field personnel of other divisions.

A continuing program of hunter safety was conducted by instructors certified by the Commission and the National Rifle Association. Boating safety education was increased in scope.

Work with youth groups has always been important and well-received. When youngsters are introduced to sound conservation principles at an early age, the chances are great that they will support wise resource use when they are adults. Here a school camp group is enjoying an outdoor class at a state park where camps are held each spring.



Division of Engineering



PERSONNEL employed by the Division of Engineering during the biennium were: the Division Chief, two Engineering Technicians II, three Equipment Foremen and the Division Secretary.

Access Areas

The two engineering technicians were charged primarily with fishing and boating access areas, from inception to readiness for the launching of boats. These men were constantly on the alert for suitable sites in general locations previously approved by the Commission. Since general localities were already approved, when practical sites were found the technician had only to employ registered surveyors and proceed with preliminary steps for purchasing the property. In any questionable cases the Division Chief was called upon for assistance in determining whether to proceed with purchase of the property.

UPON final acquisition of property for an access area, those sites selected for immediate development were turned over to the engineering technicians. As with all other construction projects undertaken by the division, they had three methods of development which could be employed according to the cost of development of the individual area. Projects costing less than fifteen thousand dollars ($15,000) could be developed on a force account basis, using personnel of the division, equipment owned by the division and purchasing necessary materials locally. Projects costing less than thirty-five hundred dollars ($3,500) were built on an informal contract basis by taking a minimum of three local bids but without drawing up rigid plans and specifications. Contracted projects costing more than thirty-five hundred dollars ($3,500) were formally contracted under detailed plans and rigid specifications. All three of these methods were used.

When the work load allowed, plans and specifications for formal contracts were drawn up by personnel of the division in the Raleigh office. At times, however, the work load was such that consulting engineers or architects were employed for specific projects. In cases of this type, either the chief of the division or one of the engineering technicians went over the site with the consultant and pointed out what was to be accomplished. Upon completion of preliminary plans, the division chief reviewed the plans to make

Maintenance of existing facilities (above) and construction of new ones (below) were the primary duties of the Division.

sure that they conformed to the desired standards. According to the specific design contract, supervision and inspections during construction were handled either by the consultant or by one of the engineering technicians.

NINE new boating access areas were added and some of the old areas were dropped during the biennium, bringing the total of areas in operation on June 30, 1964 to seventy.

In addition to the new development work, the engineering technicians were also responsible for major maintenance of the fishing access areas already in operation. Generally, this maintenance consisted of grading and graveling roads and parking areas, ramp cleaning and upkeep, bridge repairs and other work of this nature. Minor maintenance such as mowing, refuse removal and removal of dead or fallen trees was handled by the wildlife patrolman in whose work area the access area was located.

Construction and Maintenance

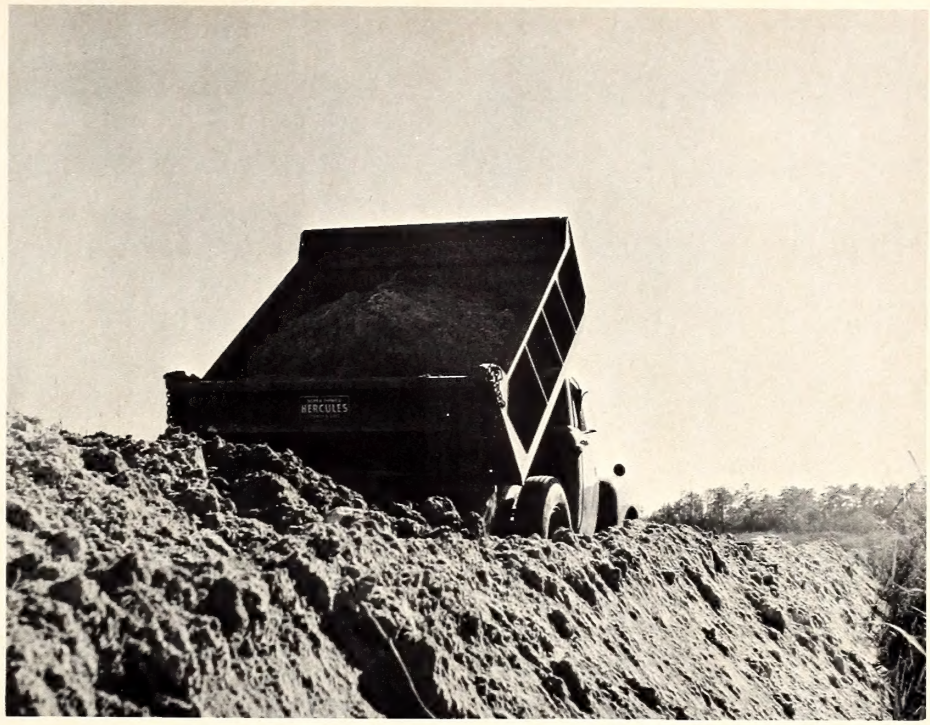
Primary duties of the three equipment foremen were refuge and hatchery road construction and maintenance, and other similar work. In order to make full use of the equipment owned by the division, each of the foremen hired temporary heavy equipment operators as they were needed. In almost all operations, additional laborers also had to be hired for brush cutting, pipe laying, drill operating, root and rock removal and a myriad of other tasks associated with earthwork construction.

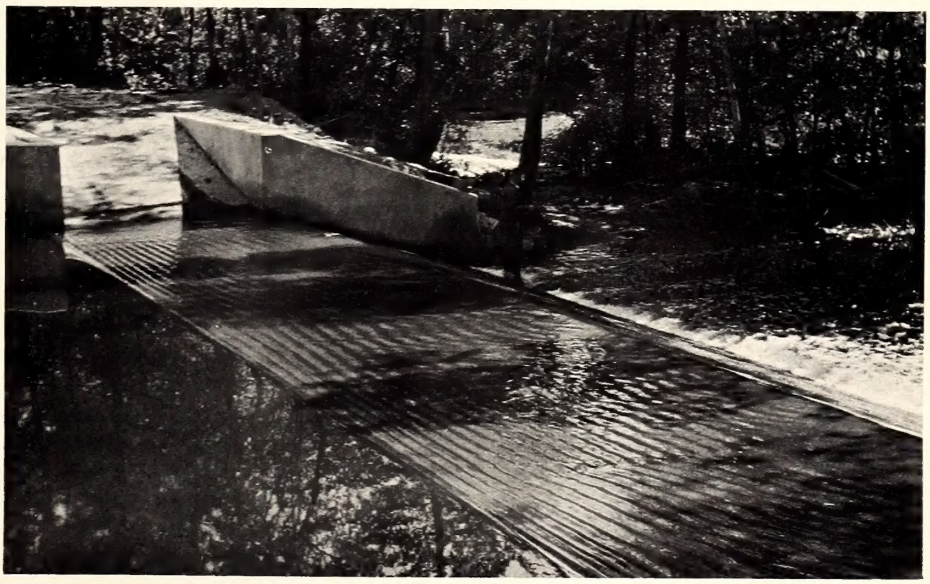
IN addition to roadwork, the foremen cleared approximately 50 acres of new pasture fields on several of the Wildlife Management Areas and a new 40 acre plant nursery at the Sandhills Wildlife Management Area. Three dams and ponds were built at the Cowans Ford waterfowl project, and work, both new construction and maintenance, was done on some of the fishing access areas under the direction of the engineering technicians.

The foremen were charged with the use of: 4 heavy bulldozers, 1 light bulldozer, 1 front-end loader, 2 draglines, 2 compressor-drills, 2 tractor-trailers, 5 dump trucks, 3 arc welders, 3 oxy-acetylene welders, 1 concrete mixer and an assortment of light equipment. In addition, the foremen took care of minor maintenance of the equipment in the field. For major break-downs where the equipment was movable, it was hauled to a shop of the distributor for the particular item. For non-movable break-downs, specialized mechanics were called to work on the equipment in the field.

Minor repairs at the fish hatcheries and Wildlife Management area residences were carried out by the hatchery superintendents or refuge managers under the direction of the division chief. This work consisted of re-roofing some of the buildings, replacement of windows, repairs of porches, plumbing repairs, etc.

MAJOR new construction projects which the division had neither the personnel nor the time to undertake on its own were handled by the division chief through the employment of consulting engineers or architects. Two such projects completed during the biennium were a





The Division provides good access to state-owned lands (above) and constructs major projects such as the one shown below.

Workers erect fences to retard beach erosion on the Outer Banks. Such fences catch wind-blown sand to form dunes.

new Sport Fisheries Headquarters Building at the Fayetteville Fish Hatchery, and the rebuilding of the old concrete spillway and the addition of a new concrete spillway at White's Mill Pond in Halifax County.

Plans for a new equipment building at the Standing Indian Wildlife Management Area were drawn by a draftsman employed on an hourly basis, and the building was constructed on force account under the direction of one of the engineering technicians. Plans for new buildings and additions at the Sandhills Wildlife Management Area and for a fishing walkway at Nutbush Creek on Kerr Reservoir were drawn on the same basis, but these projects were formally contracted.

Thirty-seven thousand five hundred feet of snow-type fence were erected on the outer banks in Currituck County in an attempt to build up sand dunes for beach erosion control. Materials for this work were purchased and the labor contracted.

At the end of the biennium, the following fishing access areas were open to the public.

Apalachia Reservoir — Cherokee County

Badin Reservoir — Lakemont — Montgomery County

Black River — Hunt's Bluff — Bladen County

Black River — Ivanhoe — Sampson County

Blewett Falls Reservoir — Pee Dee Recreation Area — Anson County

Cape Fear River — Elwell's Ferry — Bladen County

Cape Fear River — Avent's Ferry Bridge — Chatham County

Cape Fear River — Fayetteville — Cumberland County

Cape Fear River — Lillington — Harnett County

Chatuge Reservoir—Ledford's Chapel — Clay County

Cheoah Reservoir — Graham County

Chowan River—Edenhouse Bridge—Chowan County

Contentnea Creek — Snow Hill — Greene County

Dan River — Milton — Caswell County

Dawson Creek — Oriental — Pamlico County

Deep River — Carbonton — Moore County

Deep River — Sandy Creek — Randolph County

East Lake — Mashoes — Dare County

Fontana Reservoir — Yellow Branch — Graham County

Gaston Reservoir — Halifax County

Hickory Lake — 127 Bridge — Alexander County

Hickory Lake — Oxford — Catawba County

High Rock Lake — Southmont — Davidson County

High Rock Lake — Dutch 2nd Creek — Rowan County

Hiwassee Reservoir — Grape Creek — Cherokee County

Inland Waterway — Coinjock — Currituck County

James Lake — Canal Bridge — Burke County

James Lake — Linville Arm — Burke County

James Lake — North Fork — McDowell County

James Lake — Wildlife Club — McDowell County

Kerr Reservoir — Nutbush Creek — Vance County

Kitty Hawk Bay — Avalon Beach — Dare County

Lake Rim—Cumberland County

Lake Wylie — Withers Bridge — Mecklenburg County

Little River — Hall's Creek — Pasquotank County

Lookout Shoals Lake — Catawba County

Meherrin River — Murfreesboro — Hertford County

Mountain Island Lake — Davidson Creek — Mecklenburg County

Mountain Island Lake — Lucia — Gaston County

Mountain Island Lake — 16 Bridge — Gaston County

Nantahala Reservoir — Choga Creek — Macon County

Nantahala Reservoir—Rocky Branch — Macon County

Neuse River — Bridgeton — Craven County

Neuse River — Goldsboro — Wayne County

Neuse River — Richardson's Bridge — Johnston County

Northeast Cape Fear River — Holly Shelter — Pender County

Northeast Cape Fear River — Kenansville — Duplin County

Pasquotank River — Elizabeth City — Camden County

Pee Dee River — 109 Bridge — Anson County

Rhodhiss Lake — Castle Bridge — Caldwell County

Rhodhiss Lake — Dry Pond — Caldwell County

Rhodhiss Lake — John's River — Burke County

Roanoke Rapids Reservoir — Thelma — Halifax County

Roanoke River — Weldon — Halifax County

Santeetlah Lake — Ranger Station — Graham County

Scuppernong River — Columbia — Tyrrell County

Shelter Creek — Pender County

South River — Sloan's Bridge — Bladen County

South Yadkin River — Cooleemee — Davie County

Tar River — Bell's Bridge — Edgecombe County

Tar River — Falkland — Pitt County

Tar River — Greenville — Pitt County

Tar River — Old Sparta — Edgecombe County

Tar River — Rocky Mount — Nash County

Tillery Lake — Lilly Bridge — Montgomery County

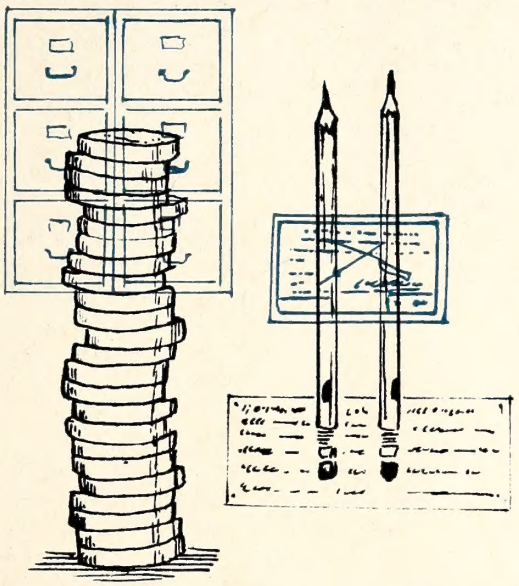
Tillery Lake — Swift Island — Montgomery County

Tuckertown Reservoir — Flat Creek — Rowan County

Waccamaw Lake — Columbus County

White Oak River — Haywood's Landing — Jones County

Division of



Finance-Personnel

THE Commission expanded its service to sportsmen during this biennium as wildlife revenue increased from $5,578,825 for the biennium ending June 30, 1962 to $6,358,401 for the biennium ending June 30, 1964.

The Division on Finance and Personnel began the biennium with a staff of fifteen employees consisting of the Division Chief, eleven accounting clerks, two stenographers and one stock clerk. Two accounting clerks were added during the biennium to handle the increased work load in the license section due to the change in the license handling and distribution procedure.

In order to facilitate the handling of the duties of this division, the work has been separated into seven work units.

Administrative Unit

The primary duties of this unit consisted of the following:

Performing stenographic duties, doing research on all applicants for license agencies, bonding license agents, handling all division correspondence, handling collection of bad checks, operation of microfilm machine, checking all magazine subscriptions and preparing work orders for IBM Unit, writing all requisitions, coding all purchase orders, preauditing monthly oil company credit card statements and preparing deposits of all Commission receipts, and also processing Workmen's Compensation claims for payment.

Payroll and Bookkeeping Unit

The primary duties in this unit consisted of the following:

Keeping the Commission's books covering expenditures, receipts and encumbrances; preparing all budgetory reports, preparing payrolls, preparing all personnel forms, maintaining personnel records, collecting rent on Commission-owned houses, handling all insurance, and retirement papers and claims, and preparation of annual salary increment schedule.

Auditing Unit

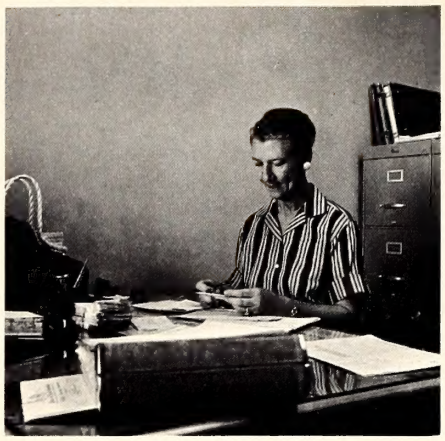
Requisitions, purchase orders, and all invoices were audited and coded. Invoices and Workmen's Compensation claims were prepared for payment. Claims for reimbursement of State road tax on non-highway use of gasoline were also handled in this section.

This section administered the Capital Improvement fund which consists of the following: preparing allotments, auditing invoices, writing vouchers, and preparing monthly and annual reports.

Federal Aid Unit

This unit kept the books and all financial records pertaining to projects which were jointly financed by the U. S. Fish and Wildlife Service and the Commis-

Fast, efficient bookkeeping techniques are used to maintain up-to-date records and to keep pace with purchasing and disbursement of funds. Trained personnel operate modern equipment.



Expenditures on Federal Aid in Fish and Wildlife Restoration projects are carefully recorded and documented.

sion. Other duties consisted of auditing invoices and requisitions pertaining to federal aid projects, maintaining an inventory of all equipment and motor vehicles purchased jointly by the Commission and the Federal Government, preparing vouchers for recovery of funds from the U. S. Fish and Wildlife Service.

Hunting and Fishing License Unit

The primary duties of the License Unit were as follows:

1. Consigning all hunting and fishing licenses to bonded agents.
2. Consigning permits and licenses to all refuge personnel for special management area hunting and fishing.
3. Collection of monies from the sale of all licenses and permits.
4. Auditing all reports covering license sales from protectors and license agents.
5. Keeping individual records and books covering all license sales by agents.
6. Issuing duplicate licenses.
7. Preparing reports pertaining to license sales.

During the biennium the revenue from hunting and fishing license sales increased from $3,873,232 for the biennium ending June 30, 1962 to $4,346,522 for the biennium ending June 30, 1964.

Motorboat Registration Unit

The functions of this section were as follows:

1. Providing the public with applications for boat numbers and certificates.
2. Receiving applications and fees for boat certificates.
3. Assigning boat numbers.
4. Issuing temporary and permanent certificates.
5. Issuing duplicates and transfers of ownership.
6. Auditing all applications and depositing all registration fees in the special fund required by law.
7. Maintaining permanent records of all boats registered, both by number and by name of owner.

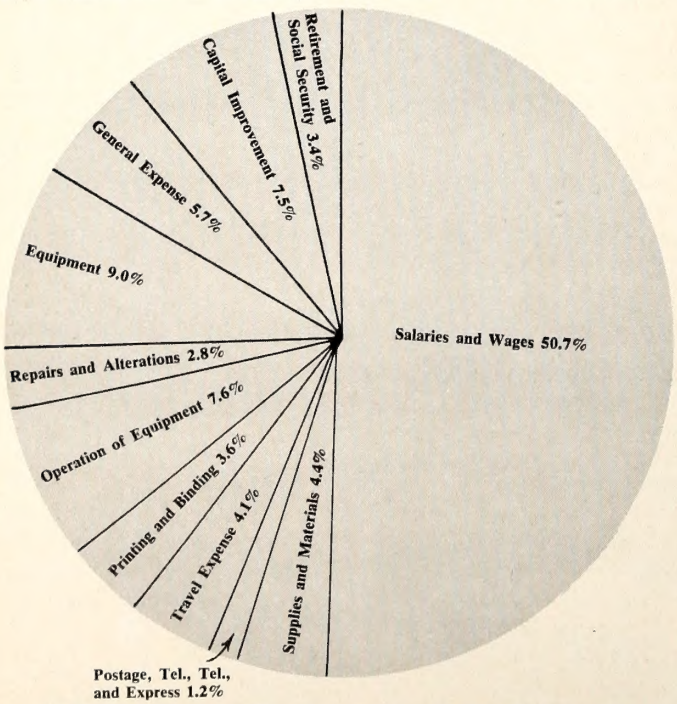
Applications for boat numbers are processed and certificates issued. Over 43,000 boats have been registered.

8. Preparing quarterly reports to the U. S. Coast Guard in accordance with federal requirements.

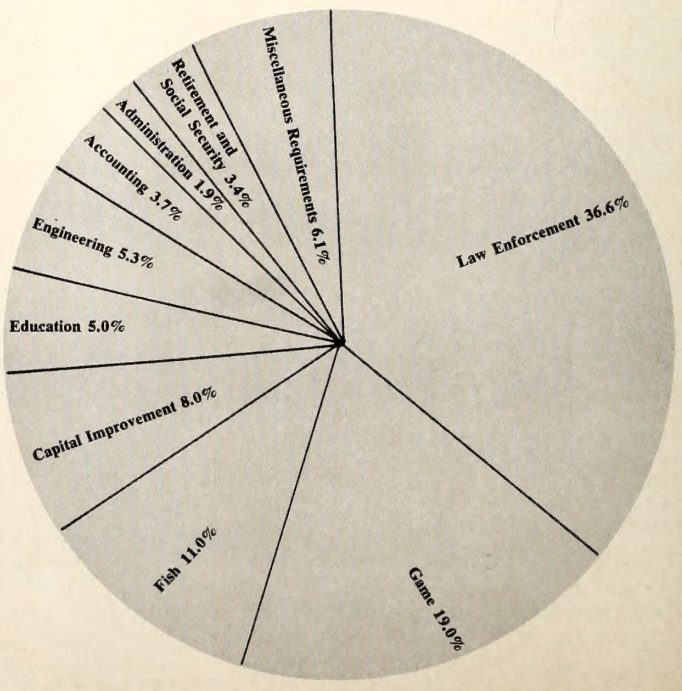
As of June 30, 1964, this section had registered 43,268 boats of over 10 horsepower and issued the certificates of number covering them.

Stockroom Unit

This unit maintained a stockroom of office supplies and publications as well as maintaining a stock of tires, batteries, and other items for the Commission's fleet of over two hundred cars and trucks and over one hundred boats. Stock record cards and a perpetual inventory were kept covering the receipt and issue of these items.



WHERE THE LICENSE DOLLAR WAS SPENT



WHAT THE LICENSE DOLLAR BOUGHT

CODE 26741 — WILDLIFE BUDGET
JULY 1, 1962 - JUNE 30, 1964

	1962-63	1963-64
I. ADMINISTRATION		
Salary—Director	$ 12,000.00	$ 12,416.70
Salaries and Wages—Staff	31,119.96	33,271.39
Postage, Tel., Tel., and Exp.	1,200.00	1,200.00
Travel Expense	1,652.84	1,963.31
General Expense	7,376.03	3,186.89
Commission Expense	8,567.46	6,535.71
TOTAL	$ 61,916.29	$ 58,574.00
II. FINANCE AND PERSONNEL		
Salaries and Wages—Perm.	$ 51,835.19	$ 61,242.49
Salaries and Wages—Temp.	852.00	612.50
Supplies and Materials	8,532.15	11,899.03
Postage, Tel., Tel., and Exp.	13,500.00	15,933.95
Travel Expense	42.51	24.95
Printing and Binding	27,724.43	20,445.21
Operation of Equipment	522.82	591.59
Repairs and Alterations	1,984.47	2,261.39
General Expense	4,871.73	5,519.52
Equipment	4,206.57	2,834.80
TOTAL	$ 114,071.87	$ 121,365.43
III. WILDLIFE PROTECTION		
Salaries and Wages—Perm.	$ 721,454.72	$ 772,528.25
Salaries and Wages—Temp.	16,852.56	6,899.86
Supplies and Materials	2,163.94	2,450.27
Postage, Tel., Tel., and Exp.	8,084.00	5,971.16
Travel Expense	69,503.40	68,953.72
Operation of Equipment	146,285.43	138,227.24
Power and Lights	692.31	
General Expense	9,976.18	9,854.51
Motor Vehicle Exchange	115,760.00	76,397.30
Equipment	25,342.58	42,426.79
Uniforms	15,890.16	13,122.15
TOTAL	$1,132,005.28	$1,136,831.25
IV. EDUCATION		
Salaries and Wages—Perm.	$ 41,454.97	$ 42,846.22
Salaries and Wages—Temp.	5,206.25	5,817.00
Supplies and Materials	3,969.87	4,853.35
Postage Tel., Tel., and Exp.	2,000.00	1,701.33
Travel Expense	3,774.34	4,193.65
Printing and Binding	40,154.00	30,392.79
Operation of Equipment	644.84	683.58
Repairs and Alterations	497.57	495.85
General Expense	3,155.71	2,650.31
Equipment	848.47	1,080.00
Motion Pictures	2,612.84	2,149.59
TOTAL	$ 104,318.86	$ 96,863.67
V. FISH MANAGEMENT ADMINISTRATION		
Salaries and Wages—Perm.	$ 21,036.00	$ 21,937.00
Salaries and Wages—Temp.	1,272.50	556.26
Supplies and Materials	144.98	− 247.57
Postage, Tel., Tel., and Exp.	900.00	900.00
Travel Expense	1,308.61	1,150.72
Printing and Binding	259.11	1.70
Operation of Equipment	749.35	572.31
Repairs and Alterations	36.00	69.75
Motor Vehicle Exchange	1.300.00	
Equipment	396.28	532.28
TOTAL	$ 27,402.83	$ 25,472.45

	1962-63	1963-64
VI. WAYNESVILLE HATCHERY		
Salaries and Wages—Perm.	$ 12,648.00	$ 13,632.00
Salaries and Wages—Temp.	1,132.00	856.00
Supplies and Materials	8,700.00	8,000.07
Postage, Tel., Tel., and Exp.	150.00	74.29
Travel Expense	574.71	822.00
Operation of Equipment	1,199.77	754.26
Power and Lights	245.83	205.23
Repairs and Alterations	764.56	1,217.36
General Expense		4.00
Motor Vehicle Exchange		981.10
Equipment	172.48	257.02
TOTAL	$ 25,587.35	$ 26,803.33
VII. MARION HATCHERY		
Salaries and Wages—Perm.	$ 12,363.00	$ 18,587.00
Salaries and Wages—Temp.	2,262.40	294.00
Supplies and Materials	11,075.00	11,015.05
Postage, Tel., Tel., and Exp.	350.00	253.91
Travel Expense	441.54	615.09
Operation of Equipment	1,087.06	577.14
Power and Lights	431.80	313.04
Repairs and Alterations	1,425.29	1,450.05
Motor Vehicle Exchange	2,200.00	
Equipment	220.47	261.96
TOTAL	$ 31,856.56	$ 33,367.24
VIII. FAYETTEVILLE HATCHERY		
Salaries and Wages—Perm.	$ 9,120.00	$ 11,265.67
Salaries and Wages—Temp.	1,593.95	480.00
Supplies and Materials	825.00	824.17
Postage, Tel., Tel., and Exp.	341.97	327.37
Travel Expense	389.54	461.44
Operation of Equipment	1,299.83	960.34
Power and Lights	258.47	317.04
Repairs and Alterations	1,494.97	966.91
Motor Vehicle Exchange		2,154.45
Equipment	217.87	308.00
TOTAL	$ 15,541.60	$ 18,065.39
IX. ROARING GAP HATCHERY		
Salaries and Wages—Perm.	$ 8,844.00	$ 11,525.81
Salaries and Wages—Temp.	2,259.65	468.00
Supplies and Materials	6,950.00	4,218.47
Postage, Tel., Tel., and Exp.	200.00	138.07
Travel Expense	406.21	405.89
Operation of Equipment	999.08	888.75
Power and Lights	338.36	235.13
Repairs and Alterations	1,498.56	1,527.01
Equipment		267.22
TOTAL	$ 21,495.86	$ 19,674.35
X. PINEOLA ARMSTRONG HATCHERY		
Salaries and Wages—Perm.	$ 17,319.00	$ 20,005.60
Salaries and Wages—Temp.	4,461.20	1,144.00
Supplies and Materials	15,450.00	15,205.13
Postage, Tel., Tel., and Exp.	900.00	767.10
Travel Expense	967.42	958.94
Operation of Equipment	2,398.68	2,398.18
Power and Lights	1,548.08	1,414.80
Repairs and Alterations	1,800.90	2,971.66
Motor Vehicle Exchange	2,200.00	4,308.90
Equipment	184.80	480.69
TOTAL	$ 47,230.08	$ 49,655.00

CODE 26741 — WILDLIFE BUDGET (Continued)

	1962-63	1963-64
XI. TABLE ROCK HATCHERY		
Salaries and Wages—Perm.	$ 8,260.00	$ 8,986.00
Salaries and Wages—Temp.	983.70	835.20
Supplies and Materials	825.00	819.44
Postage, Tel., Tel., and Exp.	150.00	142.67
Travel Expense	512.00	496.40
Operation of Equipment	1,297.52	1,273.75
Power and Lights	164.68	161.91
Repairs and Alterations	468.35	868.29
Motor Vehicle Exchange	3,499.12	
Equipment	45.88	323.06
TOTAL	$ 16,206.25	$ 13,906.72
XII. GAME MANAGEMENT SUPERVISION		
Salaries and Wages—Perm.	$ 12,746.00	$ 13,414.00
Supplies and Materials	17.86	121.52
Postage, Tel., Tel., and Exp.	245.85	236.25
Travel Expense	441.40	441.23
TOTAL	$ 13,451.11	$ 14,213.00
XIV. LAKE MATTAMUSKEET		
Salaries and Wages—Perm.	$ 4,908.00	$ 5,268.00
Salaries and Wages—Temp.	3,387.72	3,553.44
Supplies and Materials	432.04	469.97
Postage, Tel., Tel., and Exp.	594.03	578.23
Travel Expense	331.00	327.66
Operation of Equipment	1,349.84	1,451.85
Power and Lights	120.00	118.83
Repairs and Alterations	268.54	118.64
TOTAL	$ 11,391.17	$ 11,886.62
XV. STATEWIDE HUNT MANAGEMENT		
Salaries and Wages—Temp.	$ 264.75	$ 485.50
Supplies and Materials	4,156.59	4,469.22
Postage, Tel., Tel., and Exp.	100.00	
Printing and Binding	2,500.00	1,347.28
General Expense	971.09	810.86
TOTAL	$ 7,992.43	$ 7,112.86
XVI. SANDHILLS, UWHARRIE, CASWELL AND COWAN'S FORD WILDLIFE MANAGEMENT AREAS		
Salaries and Wages—Perm.	$ 26,456.00	$ 30,659.00
Salaries and Wages—Temp.	10,394.37	6,614.30
Supplies and Materials	5,818.46	5,040.77
Postage, Tel., Tel., and Exp.	497.40	490.10
Travel Expense	2,084.71	2,099.34
Operation of Equipment	5,897.99	5,897.36
Power and Lights	274.89	296.60
Repairs and Alterations	2,293.62	4,600.00
General Expense	664.75	952.50
Motor Vehicle Exchange	2,600.00	1,083.26
Equipment	500.00	1,653.57
TOTAL	$ 57,482.19	$ 59,386.80
XVIII. STATEWIDE FOREST MANAGEMENT		
Salaries and Wages—Perm.	$ 24,387.00	$ 31,527.00
Salaries and Wages—Temp.	5,858.75	4,605.15
Supplies and Materials	1,571.36	1,958.98
Postage, Tel., Tel., and Exp.	400.00	251.85
Travel Expense	2,373.57	1,835.58
Operation of Equipment	4,231.93	4,539.54
Repairs and Alterations	806.99	
General Expense	5,861.36	3,940.90
Motor Vehicle Exchange	1,200.00	2,477.74
Equipment	187.07	323.28
TOTAL	$ 46,878.03	$ 51,460.02

	1962-63	1963-64
XIX. WILD TURKEY RESTORATION		
Salaries and Wages—Perm.		$ 3,925.00
Salaries and Wages—Temp.		717.55
Supplies and Materials		410.21
Postage, Tel., Tel., and Express		51.63
Travel Expense		432.49
Operation of Equipment		432.60
General Expense		194.66
Motor Vehicle Exchange		2,035.30
Equipment		97.97
TOTAL		$ 8,297.41
XX. FUR RESOURCES-PREDATOR RESEARCH AND MANAGEMENT		
Salaries and Wages—Perm.	$ 6,154.00	$ 6,584.00
Salaries and Wages—Temp.	250.00	493.90
Supplies and Materials	125.00	124.91
Postage, Tel., Tel., and Exp.	98.90	92.53
Travel Expense	897.39	860.29
Printing and Binding		
Operation of Equipment	516.09	593.81
Equipment		35.09
General Expense	719.40	
TOTAL	$ 8,760.78	$ 8,784.53
XXI. GAME MANAGEMENT COORDINATION		
Salaries and Wages—Perm.	$ 16,356.29	$ 16,712.35
Salaries and Wages—Temp.	418.45	185.41
Supplies and Materials	466.44	436.04
Postage, Tel., Tel., and Exp.	299.70	195.18
Travel Expense	1,154.91	1,163.23
Printing and Binding	499.69	203.87
Repairs and Alterations	36.25	65.50
Equipment	9.38	163.77
TOTAL	$ 19,241.11	$ 19,125.35
XXII. WESTERN WILDLIFE MANAGEMENT AREAS		
Salaries and Wages—Perm.	$ 58,140.27	$ 56,637.32
Salaries and Wages—Temp.	11,668.06	9,027.52
Supplies and Materials	8,177.11	5,463.59
Postage, Tel., Tel., and Exp.	1,300.00	1,179.40
Travel Expense	4,658.68	3,582.72
Operation of Equipment	11,175.20	10,134.33
Repairs and Alterations	1,265.78	1,541.11
General Expense	100.00	81.25
Motor Vehicle Exchange	8,697.44	7,563.04
Equipment	1,094.48	863.71
TOTAL	$ 106,277.02	$ 96,073.99
XXIII. NORTHERN WILDLIFE MANAGEMENT AREAS		
Salaries and Wages—Perm.	$ 39,642.40	$ 50,877.02
Salaries and Wages—Temp.	6,267.86	9,340.15
Supplies and Materials	5,832.65	5,480.61
Postage, Tel. Tel., and Exp.	350.00	338.22
Travel Expense	2,689.40	3,632.12
Operation of Equipment	7,182.79	8,699.21
Power and Lights	245.29	347.10
Repairs and Alterations	1,118.40	1,467.99
Motor Vehicle Exchange	6,373.02	3,619.22
Equipment		1,223.41
TOTAL	$ 69,701.81	$ 85,025.05
XXIV. EASTERN WILDLIFE MANAGEMENT AREAS		
Salaries and Wages—Perm.	$ 19,513.00	$ 20,436.08
Salaries and Wages—Temp.	6,779.00	8,221.20
Supplies and Materials	3,227.83	3,398.49
Postage, Tel., Tel., and Exp.	474.75	428.33

	1962-63	1963-64
Travel Expense	1,342.56	1,341.26
Operation of Equipment	4,499.46	4,355.25
Power and Lights	62.77	192.66
Repairs and Alterations	1,618.08	1,329.98
General Expense	842.77	885.73
Motor Vehicle Exchange		3,133.90
Equipment	27.40	530.83
TOTAL	$ 38,387.62	$ 44,253.71

XXV. UPLAND GAME RESTORATION

Salaries and Wages—Perm.	$ 61,941.10	$ 70,795.00
Salaries and Wages—Temp.	58,392.72	43,218.28
Supplies and Materials	20,011.02	21,157.98
Postage, Tel., Tel., and Exp.	2,000.00	1,524.48
Travel Expense	5,972.22	6,571.71
Printing and Binding	1,000.00	341.88
Operation of Equipment	12,913.23	12,734.93
Power and Lights	292.56	75.19
Repairs and Alterations	210.46	90.01
General Expense	17,119.75	7,375.56
Motor Vehicle Exchange	6,450.00	1,483.26
Equipment	8,302.71	
Purchase of Raccoons	1,987.50	2,000.00
TOTAL	$ 196,593.27	$ 167,368.28

XXVI. COOPERATIVE RESEARCH

General Expense	$ 5,000.00	$ 11,078.36

XXVII. STATEWIDE WATERFOWL

Salaries and Wages—Perm.	$ 6,516.00	$ 6,636.00
Salaries and Wages—Temp.	3,428.98	3,979.80
Supplies and Materials	2,524.03	2,295.23
Postage, Tel., Tel., and Exp.	200.00	176.05
Travel Expense	627.19	738.84
Operation of Equipment	999.49	995.04
Repairs and Alterations	16.00	254.70
General Expense	729.31	668.40
Equipment	194.07 CR	3,529.13
TOTAL	$ 14,846.93	$ 19,273.19

XXX. FISHERIES MANAGEMENT COORDINATION

Salaries and Wages—Perm.	$ 11,444.00	$ 12,264.00
Salaries and Wages—Temp.		100.00
Supplies and Materials	319.65	87.49
Postage, Tel., Tel., and Exp.	274.46	275.00
Travel Expense	812.59	660.99
Repairs and Alterations	42.38	34.80
General Expense	445.00	100.00
Equipment	222.45	268.33
TOTAL	$ 13,560.53	$ 13,790.61

XXXI. FISHERIES SURVEY AND MANAGEMENT

Salaries and Wages—Perm.	$ 72,074.00	$ 70,489.95
Salaries and Wages—Temp.	26,023.75	24,548.48
Supplies and Materials	5,235.17	5,035.71
Postage, Tel., Tel., and Exp.	1,360.00	1,360.00
Travel Expense	7,192,70	7,660.16
Printing and Binding	139.56	125.97
Operation of Equipment	8,770.89	7,848.09
Power and Lights	101.75	97.00
Repairs and Alterations	157.06	84.64
General Expense	1,695.50	3,489.58
Motor Vehicle Exchange	5,515.15	3,543.02
Equipment	1,204.28	3,103.97
TOTAL	$ 129,469.81	$ 127,386.57

	1962-63	1963-64

XXXII. LAKE MANAGEMENT STUDY

Salaries and Wages—Perm.	$ 5,940.00	$ 5,147.00
Salaries and Wages—Temp.	2,679.90	2,109.50
Supplies and Materials	418.80	419.83
Postage, Tel., Tel., and Exp.	73.30	73.75
Travel Expense	190.33	171.06
Operation of Equipment	612.08	388.51
Power and Lights	52.85	56.18
Repairs and Alterations	12.96	14.94
Motor Vehicle Exchange	1,400.00	
Equipment	231.16	317.34
TOTAL	$ 11,611.38	$ 8,698.11

XXXIII. POWER RESERVOIR MANAGEMENT

Salaries and Wages—Perm.	$ 5,928.00	$ 6,548.00
Salaries and Wages—Temp.	5,865.20	2,828.90
Supplies and Materials	300.00	187.18
Postage, Tel., Tel., and Exp.	97.37	97.78
Travel Expense	282.50	300.00
Operation of Equipment	1,203.35	866.59
Power and Lights	15.00	11.25
General Expense	180.00	120.00
Motor Vehicle Exchange		661.90
Equipment	166.74	382.63
TOTAL	$ 14,038.16	$ 12,004.23

XXXIV. RIVERS AND STREAMS PROJECT

Salaries and Wages—Perm.	$ 9,858.00	$ 7,915.03
Supplies and Materials	763.75	848.78
Postage, Tel., Tel., and Exp.	198.34	182.05
Travel Expense	1,200.97	781.51
Operation of Equipment	961.65	716.25
Repairs and Alterations	63.90	
General Expense	90.00	
Motor Vehicle Exchange		862.74
Equipment	1,352.24	852.44
TOTAL	$ 14,488.85	$ 12,158.80

XXXV. ENGINEERING

Salaries and Wages—Perm.	$ 36,618.17	$ 37,685.57
Salaries and Wages—Temp.	1,999.05	6,719.00
Supplies and Materials	475.45	977.62
Postage, Tel., Tel., and Exp.	699.94	911.58
Travel Expense	10,123.50	8,180.20
Operation and Equipment	8,978.83	17,327.79
Repairs and Alterations	13,995.05	1,496.57
General Expense	412.87	946.56
Motor Vehicle Exchange	5,775.60	4,005.50
Equipment	6,668.76	18,492.60
TOTAL	$ 85,747.22	$ 96,742.99

XXXVI. ACQUISITION AND DEVELOPMENT OF LANDS AND WATERS—ENGINEERING

Salaries and Wages—Temp.	$ 11,987.70	$ 7,697.15
Supplies and Materials	3,596.68	864.57
Operation of Equipment	17,466.17	12,680.74
Repairs and Alterations	46,507.48	46,531.42
General Expense		250.00
WILDLIFE PROTECTION		
Repairs and Alterations	10,658.65	16,073.75
General Expense	5,139.23	6,643.88
EDUCATION		
Printing and Binding	48,283.00	55,776.59
TOTAL	$ 143,638.91	$ 146,518.10

CODE 26741—WILDLIFE BUDGET (Continued) 1963-54—1963-64

	1962-63	1963-64
XXXVII. MISCELLANEOUS REQUIREMENTS		
Workmen's Compensation	$ 3,985.16	$ 8,452.96
State Retirement	52,978.32	57,273.06
Insurance and Bonding	7,828.41	8,874.83
County's Share of Timber Rec.	13,749.60	11,108.68
General Expense	6,745.16	6,233.36
Bus Transportation	547.20	600.00
Social Security	48,837.65	53,684.35
Radio Communications	160,863.00	992.01
TOTAL	$ 295,534.50	$ 147,219.25
XL. U. S. FOREST SERVICE		
Payment of U. S. Forest Service Part of Receipts	$ 81,672.00	$ 75,000.00
XLII. WELDON HATCHERY		
Salaries and Wages—Temp.	$ 650.00	$ 476.00
Supplies and Materials	625.46	387.69
Postage, Tel., Tel., and Exp.	100.00	73.98
Travel Expense	98.10	130.15
Power and Lights	72.08	75.43
Repairs and Alterations	34.50	122.04
Equipment		128.00
TOTAL	$ 1,580.14	$ 1,393.29
XLIII. TRANSFER TO CAPITAL IMPROVEMENT FUND	$ 226,891.88	$ 246,254.00
REFUND OF RECEIPTS AND EXPENSES	$ 90,654.16	$ 79,130.81
TOTAL	$3,302,523.84	$3,170,214.76

RECEIPTS

	1962-63	1963-64
Hunting and Fishing Licenses	$2,103,510.52	$2,243,712.33
Management Area Receipts	99,916.75	139,549.29
Federal Cooperation	506,486.23	375,040.02
Miscellaneous Receipts	9,491.46	9,878.82
Sale of Surplus Property	17,448.07	21,514.82
Sale of Publications	24,430.23	35,505.27
Sale of Permits—U. S. Forest Service	170,380.50	176,067.60
Rent of State Property	10,107.75	10,014.55
Special Trout Licenses	58,398.50	55,481.75
Caswell Area Receipts	9,432.04	15,361.58
Reimbursement from Motorboat Fund	44,960.00	51,928.00
Refund of Receipts and Expenses	90,654.16	79,130.81
TOTAL	$3,145,216.21	$3,213,184.84

SUMMARY OF OPERATIONS

	1962-63	1963-64
Funds transferred from preceding year	$ 664,359.54	$ 507,051.91
Gross Receipts for year	3,145,216.21	3,213,184.84
Total Available Funds	3,809,575.75	3,720,236.75
Less Expenditures	3,302,523.84	3,170,214.76
*Operating Reserve June 30, 1963	507,051.91	
*Operating Reserve June 30, 1964		550,021.99

*This operating reserve is required for meeting payrolls and other obligations during the months of July, August, and September each year when revenue from hunting and fishing license receipts is very low.

SUMMARY OF COMMISSION RECEIPTS FOR TEN YEAR PERIOD 1953-54—1963-64

The following table gives a picture of the growth in Wildlife revenue during the past ten years.

Fiscal Year	Receipts	Fiscal Year	Receipts
1953-54	$1,698,771.00	1959-60	$2,496,510.00
1954-55	1,860,085.00	1960-61	2,650,974.00
1955-56	2,017,565.00	1961-62	2,927,251.00
1956-57	2,130,884.00	1962-63	3,145,216.00
1957-58	2,321,263.00	1963-64	3,213,185.00
1958-59	2,434,167.00		

MOTORBOAT BUDGET—CODE 26743 JULY 1, 1962—JUNE 30, 1964

	1962-63	1963-64
LXXX. ADMINISTRATION		
Salaries and Wages—Perm.	$ 5,442.00	$ 5,879.00
General Expense		500.00
Transfer to Code 26741	6,605.00	4,754.00
TOTAL	$ 12,047.00	$ 11,133.00
LXXXI. FINANCE AND PERSONNEL REGISTRATION		
Salaries and Wages—Perm.	$ 14,955.00	$ 15,784.48
Salaries and Wages—Temp.	552.00	597.00
Supplies and Materials	1,947.15	1,136.64
Postage, Tel., Tel., and Exp.	5,000.00	6,500.00
Printing and Binding	666.94	2,159.20
Operation of Equipment	622.18	682.17
General Expense	507.50	2,362.59
Equipment	356.51	
Retirement	1,185.81	1,249.80
Social Security	918.33	1,004.47
Transfer to Capital Improvement Fund		81,300.00
TOTAL	$ 26,711.42	$ 112,776.35
LXXXII. WILDLIFE PROTECTION MOTORBOAT ENFORCEMENT		
Travel Expense	$ 385.77	$
Equipment	7,893.38	
Transfer to Code 26741	38,355.00	47,174.00
TOTAL	$ 46,634.15	$ 47,174.00
LXXXIII. EDUCATION DIVISION		
Salaries and Wages—Perm.	$ 10,797.16	$ 11,226.00
Supplies and Materials	159.40	409.41
Postage, Tel., Tel., and Exp.	200.00	200.00
Travel Expense	110.91	242.82
Printing and Binding	6,845.33	5,396.00
General Expense		300.00
TOTAL	$ 18,112.80	$ 17,774.23
REPAYMENT TO C & E FUND	$ 25,000.00	$ 25,000.00
TOTAL	$ 128,505.37	$ 213,857.58

RECEIPTS

Registrations—Boat	$ 136,158.00	$ 150,398.24

MOTORBOAT BUDGET—CODE 26743

SUMMARY OF OPERATIONS

	1962-63	1963-64
Transferred from preceding year	$ 110,267.78	$ 117,920.41
Receipts	136,705.50	151,157.24
Total Available Funds	246,973.28	269,077.65
Less Expenditures	129,052.87	214,616.58
Operating Reserve June 30, 1963	117,920.41	
Operating Reserve June 30, 1964		54,461.07

HUNTING LICENSES AND PERMITS

	1962-63		1963-64	
	Number	Value	Number	Value
Resident Combination Hunting and Fishing Licenses	142,926	$ 857,556.00	148,345	$ 890,070.00
County Resident Hunting Licenses	143,186	214,779.00	142,126	213,189.00
State Resident Hunting Licenses	97,722	390,888.00	103,578	414,312.00
Nonresident Hunting Licenses	4,056	79,092.00	4,329	84,415.50
Nonresident 6-Day Hunting Licenses	2,354	36,487.00	2,736	42,408.00
State Resident Trapping Licenses	1,140	3,420.00	1,289	3,867.00
Hunting Guides Licenses	284	1,420.00	285	1,425.00
County Resident Trapping Licenses	1,621	3,242.00	1,703	3,406.00
Controlled Shooting Preserve Hunting Licenses	36	180.00	49	245.00
Management Areas Hunting Permits	47,387	155,722.00	50,361	161,784.50
Fur Dealers Licenses	98	1,423.00	101	1,808.00
Nonresident Landowners Hunting Licenses	3	15.00	4	20.00
Nonresident Trapping Licenses	2	50.00	3	75.00
Lake Mattamuskeet Hunting Permits	3,735	7,470.00	4,196	8,392.00
Bush Blind Licenses	348	348.00	580	633.50
Shooting Point Licenses	203	1,827.00	216	1,944.00
TOTALS	445,101	$1,753,919.00	459,901	$1,827,994.50

Hunting licenses are sold for the fiscal year, and fishing licenses are sold for the calendar year. Since combination hunting and fishing licenses are on a fiscal year basis, the total income derived is included in the hunting license table.

The comparative figures shown above are for the license years and cannot be added together to obtain a total revenue figure for any fiscal year. The correct revenue figures for the fiscal years 1962-63 and 1963-64 are shown in the budget.

FISHING LICENSES AND PERMITS

	1962		1963	
	Number	Value	Number	Value
State Resident Daily Fishing Licenses	95,997	$ 71,997.75	103,785	$ 77,838.75
County Resident Fishing Licenses	24,886	37,329.00	28,096	42,144.00
State Resident Fishing Licenses	58,852	235,408.00	69,941	279,764.00
Nonresident Daily Fishing Permits	23,419	35,128.50	25,405	38,107.50
Nonresident 5-Day Fishing Permits	6,791	23,768.50	7,996	27,986.00
Nonresident Fishing Licenses	3,850	30,800.00	4,135	33,080.00
State Resident Trout Licenses	45,358	45,358.00	46,527	46,527.00
Nonresident Trout Licenses	2,543	7,629.00	2,591	7,773.00
Special Device Fishing Licenses	17,525	9,861.00	15,523	8,079.25
Management Areas Daily Fishing Permits	36,579	36,579.00	36,696	36,696.00
Lake Rim Daily Fishing Permits	650	650.00	630	630.00
Lake Rim Special Fishing Permits	9	135.00	17	255.00
Non-Game Fish Propagation Licenses	15	7.50	16	8.00
Game Fish Propagation Licenses	6	30.00	12	60.00
TOTALS	316,480	$ 534,681.25	341,370	$ 598,948.50

ADDRESS CHANGE NOTIFICATION

Name_____

Old Address_____

_____

New Address_____

_____

Zip Code_____

IMPORTANT:

Enclose present Address Label
Please notify us promptly of change of address.

Use this blank to subscribe NOW—$.50 a year
$1.00 for two years. No stamps, please

WILDLIFE IN NORTH CAROLINA **New** ☐
P. O. Box 2919, Raleigh, N. C. 27602 **Renewal** ☐

I enclose $_____; send me WILDLIFE IN NORTH CAROLINA

for_____years starting with the earliest possible issue.

Name_____

Street or Route_____

City_____ State_____ Zip Code_____

Please notify us promptly of change in address

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1:29/2
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Wildlife IN NORTH CAROLINA

North Carolina State Library
Raleigh

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Doc.

FEBRUARY, 1965

Joel Arrington

Last Chance....

For quail, that is. The open season on bobwhite ends February 15, and this English setter, Little Mary, owned by Ronald Lane of Smithfield, has at least one pinned down here. We hope that your season has been a rewarding one. Now it's almost time to plant food and cover plants for the birds where you hunted them this winter.

STATE OF NORTH CAROLINA

DAN K. MOORE
GOVERNOR

NORTH CAROLINA
WILDLIFE RESOURCES COMMISSION

LEE L. POWERS, CHM. _ _ _ _ _ LAKE LURE
WALTER LAMBETH, JR., V. CHM. _ CHARLOTTE
PHIL W. ELLIS, SEC'Y. _ _ _ HOLLY SPRINGS
G. E. BEAL _ _ _ _ _ _ _ _ _ _ RED OAK
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C. FLOYD WILLIAMSON _ _ _ ENGINEERING

WILDLIFE IN NORTH CAROLINA recognizes the need for close cooperation between State and Federal conservation agencies and the people who hunt and fish—to bring about a restoration of our renewable resources. The Editor gratefully receives for publication news items, articles, and photographs dealing with the North Carolina out-of-doors, but reserves the right to reject materials submitted. Full credit is given for all materials published.

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Wildlife IN NORTH CAROLINA

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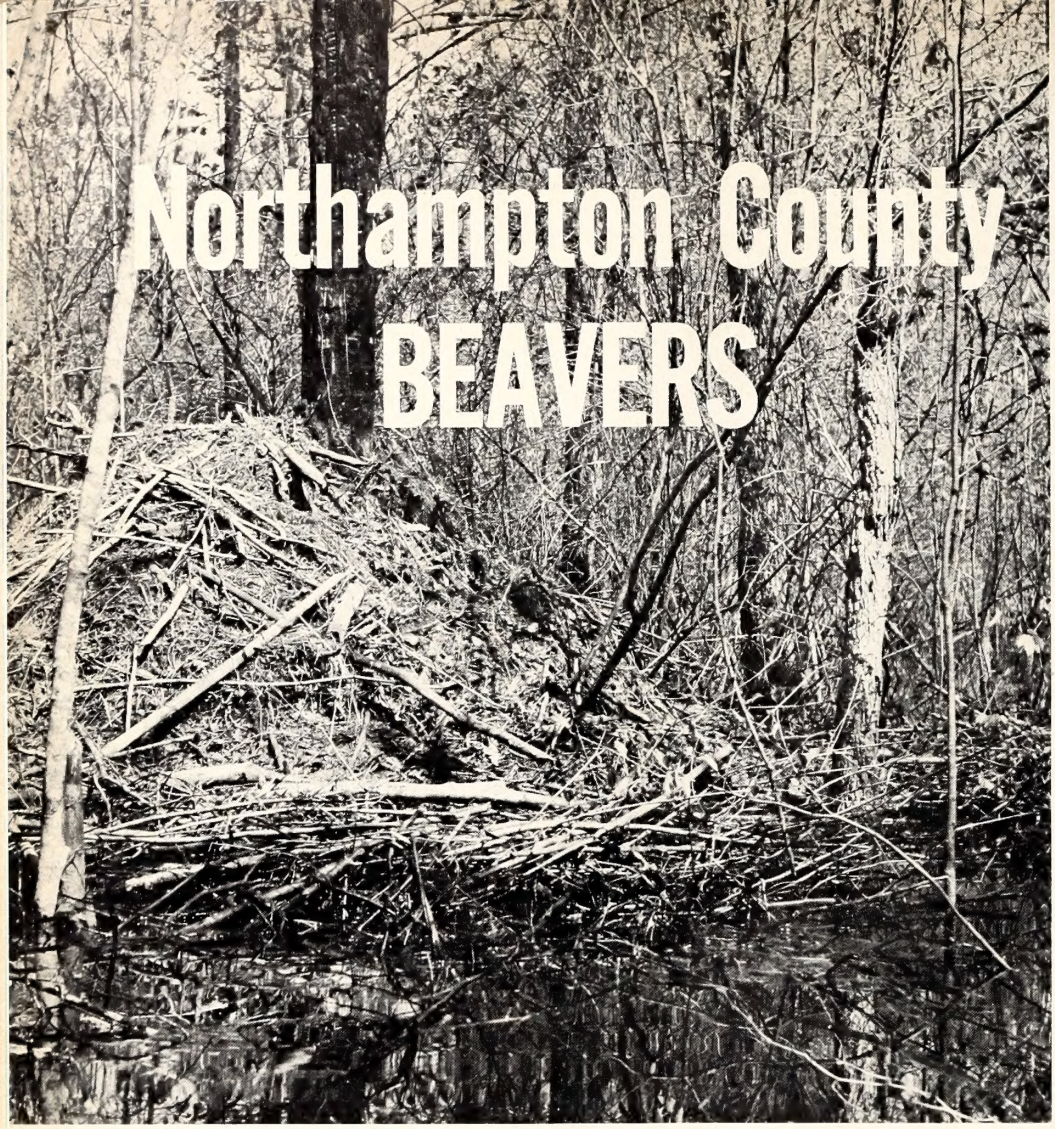
Whether you call him ground hog or woodchuck, this overgrown ground squirrel is a fairly respectable citizen of the western half of the state. A 10-pound woodchuck is an average-sized adult, but size varies with age. One of the best places to see this burrowing animal is in the fields along the Blue Ridge Parkway. Look for him in the summer, although at least one is bound to be out on February 2! Painting by John W. Taylor.

Northampton County BEAVERS



Jack Dermid

by Q. J. Stephenson
State Director
National Trappers Association of America

PROBABLY no wild animal contributed more to the successful development and exploration of early America than the animal I fondly know as Paddy the Beaver. In 1584, when the first settlers landed on Roanoke Island, beavers and the dams of these energetic animals were found in every section of the state. Our colonial forefathers used its pelts for clothing and shelter during the cold winter months. History tells us of the traffic in beavers' pelts by boat into Virginia by way of Currituck Sound, at which time the price of a rifle was a stack of beaver pelts as high as the weapon was long. Beavers were trapped heavily until about 1840, reducing populations to zero in many parts of the state. In Northampton County, we're told, the last beavers were trapped shortly after the Civil War and by 1900, it is believed, they were no longer to be found in this state.

Sometime during 1954, 15 beavers were released in the bottomlands of Northampton County (thanks to the Wildlife Resources Commission) and they have been busy ever since, making homes, building dams, and growing in numbers.

Some people think of a beaver dam as a trivial thing. I wish they could see some of the beautiful lakes in my county that are the result of dams. How the beaver knows where to locate its dam, I'll never know. But it does, and without ever making a mistake! The height of dams ranges from about a foot to more than ten feet and many exceed 1,000 feet in length. Dams normally are constructed of sticks, small logs and leaves along with a generous application of mud; however, I found one dam that contained coal, tin cans, rocks weighing up to ten pounds and an old iron pot. Behind the iron pot was a nice five-acre lake.

School children have been taught to respect the beaver for its industrious qualities and amazing engineering feats. Adults, however, sometimes find its presence obnoxious and they cite a long list of misdeeds, ranging from drowned timber to flooded pasture and plugged culverts. No one denies that when these situations occur, the big rodent becomes a pest—that is, to some people.

As for me, well, I'd give a thousand dollars any day to have a beaver pond on my property. I've always admired Paddy for his get-up-and-go, his creativity and urge to get the job done. Can you imagine a beaver on relief? In this day when so many people feel that their government owes them a living, I think the symbol of the industrious and energetic beaver is a good thing for Americans to keep in mind.

To me, the beaver and the dams it builds represent many things and many values. Its ponds conserve water and benefit flood control. Deer fleeing from feral dogs—and the number present to chase them in Northampton County appear to be legion—must have a warm spot in their hearts for beaver ponds and the temporary sanctuary they provide. Beaver ponds provide homes for fish, attract muskrats, mink, raccoons, otters and waterfowl and encompass a veritable treasure house of wild animal activity that includes everything from kingfishers to crayfish and snapping turtles to bullfrogs.

I have many fond memories of experiences around beaver ponds. One fall afternoon, I came upon a large beaver repairing a break which some fisherman had made in its dam. Here for nearly an hour, deep in the woods, I was in Nature's classroom watching the furry engineer repair his dam. Later at this pond, I watched incoming flights of wood ducks.

The lucky hunter who finds ducks in beaver ponds enjoys good hunting and you can be sure that he keeps the location of the area a secret.

While I have great admiration for the beaver, I have always dreamed of the day when I might trap them for their pelts. That dream was realized last winter when the Wildlife Resources Commission permitted a trapping season from February 1 through March 1. During the 30-day period, I relived the trapping experiences of my forefathers. I caught some beautiful beavers using a large-size Conibear trap. Other trappers used standard steel traps ranging from No. 2 to No. 4 in size. I personally prefer Conibear traps because they kill the trapped animal almost instantly and there is little chance for it to escape. Trappers using steel traps should use nothing smaller than No. 3's for beavers.

I am told that last year's harvest of beavers totalled about 250. Fur dealers paid up to $11 for the pelts of large specimens. This is not much for an animal whose weight sometimes exceeds 60 pounds. Weights of average adults range between 30 and 40 pounds. Numerous trappers, however, complained of receiving only $4 for large beavers. I saw some of these pelts. They were improperly skinned and stretched. Many contained large gobs of fat and were poorly fleshed. I don't blame the fur dealers for paying a low price for inferior merchandise. Large pelts I sold brought $10, medium size, $5, and small $3.

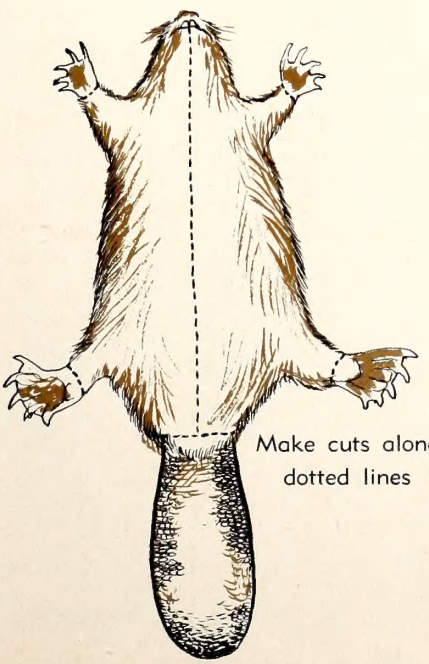
To help other trappers receive more money for their beaver pelts, I offer the following suggestions: (1) If possible, tend traps every day. Most beavers will drown if the set is made right but live animals suffer in traps not tended regularly. No one wants that to happen. Waterlogged fur often has less value. (2) Before skinning, be sure the fur is washed clean of mud and is dry. The latter can be easily done by rubbing the fur with newspapers. Fur coated with ice should be thawed out gradually and never placed near a stove or intense heat. (3) Skinning: Never cut the fur along the legs as in skinning a muskrat or mink. Cut the pelt from the tip of the lower jaw to the base of the tail along the underside of the body. Separate the pelt from the carcass by intermittent pulling and cutting with a sharp knife. For best results, cut all feet off at the hair line before skinning. (4) Fleshing: Before this is done, roll up the pelt and place it in a refrigerator or other cold place for at least six hours. This will cause the fat to harden and make it easier to scrape from the pelt. (5) Stretching: Stretch all pelts as nearly round as possible. Some trappers sew the pelt on a round frame (wire or wooden), using strong cord and a large needle. I use small staples placed at about an inch and one-half intervals in a circular pattern on a wall or similar background. (6) Keep cured pelts in a cool, well-ventilated building, out of the sun and away from mice and rats. Follow these suggested practices and you're bound to receive more money for your beaver pelts next winter.

Finally, I would make the following suggestions to all people who plan to trap beavers in 1965:

Cooperate with landowners. Get their permission before setting any traps. Don't chop into beaver lodges and don't set steel traps within 10 feet of a beaver lodge. It's unlawful. Don't shoot beavers. A shot pelt never brings top value. Treat your competitor like you would want to be treated. Practice honesty and fair play on your traplines. Don't be a fur hog. Leave some broodstock for next year.

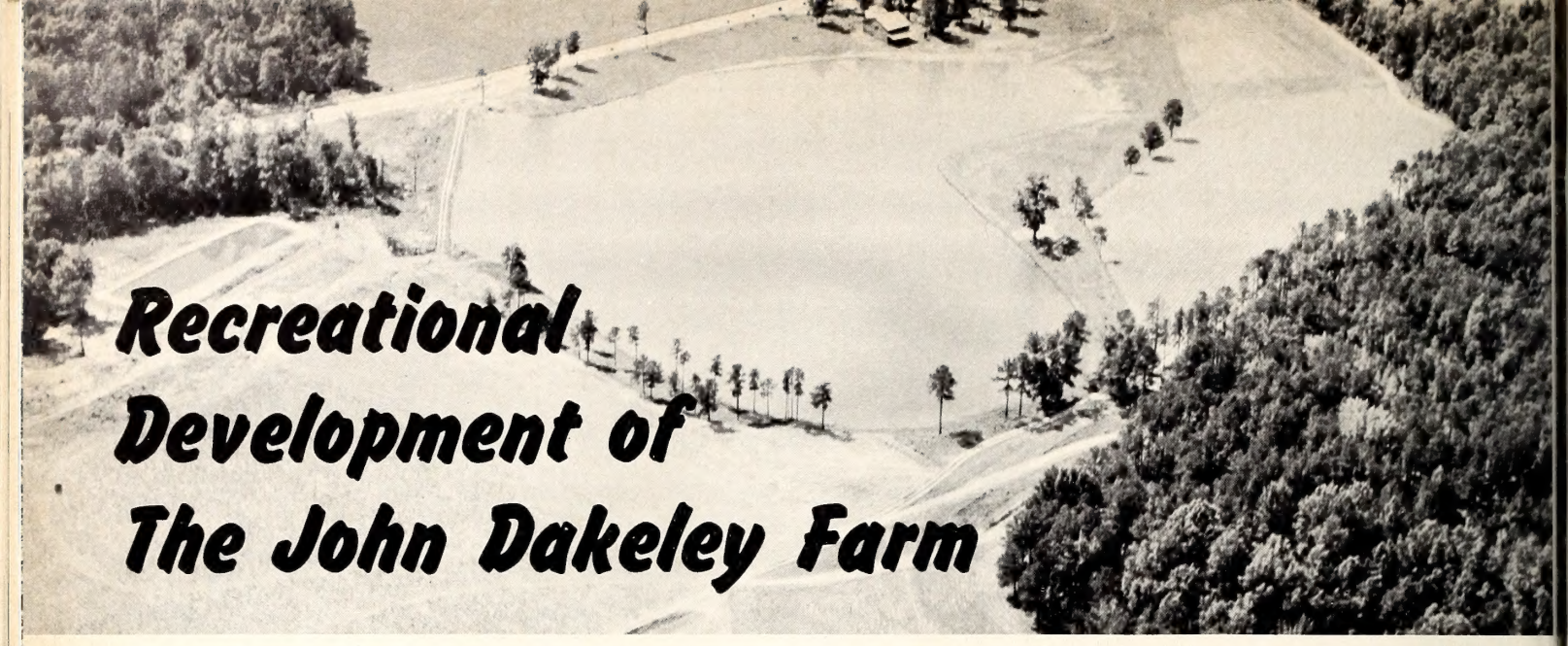
This is the big number 3 Conibear trap being set for beaver. It's a bit of a trick to cock the heavy spring and this must be done with extreme care.

Joel Arrington



Tack staples at about one and one-half inch intervals

Skinning and Handling Beaver Pelts



Recreational Development of The John Dakeley Farm

Jack Dermid

by S. Thad Cherry

John Dakeley might be described as a typical Piedmont farm owner. He owns a modest seven room white frame house located on 348 acres of land along U. S. Highway No. 630, just twelve miles southeast of Northton, a city with a population of near 60,000, and 30 miles west of Westville, a city with a population of 39,000. John Dakeley shares his home with his wife Julia, and their two sons, John, Jr., age 16 and Jimmy, age 14.

About three years ago, the Dakeleys sold their beef cattle. Their farm was still capable of producing an adequate living, but the Dakeleys became interested in finding an additional farm income. John and Julia had always been confronted by sportsmen from both Northton and Westville, wanting to fish the eight-acre lake or to hunt on the farm. One day John brought home a pamphlet concerning the potential of recreation areas on farms. He and Julia knew then they had found their added income.

But the Dakeleys did not jump blindly into their new idea. They carefully studied all the aspects of development of their farm. They realized that such a development would require a substantial investment of money, labor, and personal effort. However, they thought that their 348-acre farm had the qualities necessary for a successful venture.

It had 273 acres of cleared land which could be developed for quail and dove hunting. They had 67 acres of hardwood forest which abounded with squirrels. They already had a well-stocked eight-acre lake and an area suitable for camping. These areas, it seemed, could be readily adapted for public recreation.

The boys, John, Jr., and Jimmy, were very much interested in the development of their farm for recreation. Perhaps it was their great enthusiasm that convinced John and Julia that they should proceed with their project. So, a little over two years ago, the Dakeleys decided to proceed with the development of their farm for recreation.

John Dakeley's first step in the development of his farm was to seek the advice of the Wildlife Resources Commission's District Biologist who lived in Northton. The biologist walked over the Dakeley farm and discussed the aspects of development with the family. He explained that there were ways in which the farm could be greatly improved for both the hunter and for wildlife. A habitat improvement plan was prepared by the biologist and selected wildlife planting materials were obtained from the North Carolina Wildlife Resources Commission.

John and the two boys worked hard during the winter months improving the game habitat of their farm. Together they set out 3,000 shrub lespedeza seedlings along borders. Beside the shrub lespedeza, they sowed 10-foot strips of sericea lespedeza. Since these lespedeza plantings would not produce seed during the first year, plantings of annual seed mixture were also made. Multiflora rose fences were set out along the west and north boundaries of the farm and along a contour of a large field. All plantings were well fertilized for John Dakeley fully understood their importance. Through these plantings, he was greatly increasing the wildlife carrying capacity of his farm.

Then the Dakeleys turned their attention to the farm pond. Luckily, the pond was already well-stocked with bass and bluegills. The only pond management necessary was the periodic application of 8-8-2 fertilizer, which was continued until the pond achieved a proper color, or bloom.

John, Jr., thought of the idea of boat rentals and took this on as his own special project. He bought some cypress lumber in Northton and, with the help of his father, built six, 10-foot fishing boats which he would rent at the small pier.

Jimmy thought up a project for himself, too. He could dig

The following account of how the recreational potential of a typical farm was developed into a profitable sideline activity is strictly hypothetical. While the John Dakeley family and farm are, of course, fictional their successful enterprise is certainly well within the realm of possibility for many North Carolina farm families.

The pressing need for more outdoor recreational opportunities for urban dwellers is widely recognized. There is also increasing awareness that many family-size farms have excellent capabilities for providing these services. Therefore, this article is presented with the hope that it may prove helpful to those landowners who seek a means through which they may supplement their farm income in an interesting and dignified manner.

The North Carolina Wildlife Resources Commission offers to interested citizens the services of its staff of game biologists for technical assistance in planning wildlife habitat improvements and practical game management programs. Assistance with other phases of recreation development is available from other State and Federal agencies.

Ted R. Mitchell,
Leader Upland Game Restoration Project

more worms around the barn than all the fishermen in Northton could use, and Quickly Creek was full of golden shiners. Jimmy would set up a small shop and sell worms and minnows to the fishermen.

John and the boys took on as a joint project the building of picnic tables and charcoal grills for the camping and picnicking area. The tables were built with "2 x 6" pine lumber, and were treated with linseed oil. The boys used the school's welding unit to build charcoal grills from old bog disk blades and three-inch iron pipe. Two outdoor "privy" type toilets were purchased from the Northton Lumber Company. A two-inch plastic hose was run from the pump house to the camping area to provide water. It was a simple matter to build a road to the camping area. A parking lot was also provided.

As Julia Dakely was the artist of the family, she drew the duty of painting three signs for advertisement. One sign was placed at their driveway and one was placed ten miles from the farm in each direction of the highway.

So with the coming of spring weather, the Dakeleys had their farm almost ready. Six campsites were set up near the lake, each with its own picnic table and charcoal grill. Each side of the lake had an old 55-gallon oil drum for a trash can. The four additional picnic tables were placed nearby for the use of non-camping picnickers.

As the district biologist had suggested plans for dove management, the Dakeleys now focused their attention on this aspect. John rented 80 acres of his bottomland along the Slowly River to a nearby dairy farmer for silage corn. The silage was to be cut by the opening date of the dove-hunting season. To complement the silage as a dove attraction, John planted three, four-acre plots of browntop millet. He planned to follow the biologist's suggestion that dove hunting be restricted to only two afternoons per week, Saturday and Wednesday, so as not to overshoot the area. John also planned to harvest one of the millet fields prior to the opening day of hunting because he knew this would leave the ground covered with seed.

Preparing for the squirrel hunters was no problem. Since the 67-acre hardwood forest adjoined the camping area, the camper's parking lot could serve

Browntop millet nods in the fall breeze and should attract doves. This is but one of the useful wildlife food plants.

squirrel hunters as well as campers.

One matter which the Dakeleys could not afford to overlook was the matter of insurance. They realized that they could become involved in serious trouble if an accident were to occur on their farm. Through an insurance company in Northton they acquired a comprehensive liability policy.

Next, the Dakeleys were faced with the decision of how much to charge for the use of their facilities. They realized that if they were to get any return visits by their customers, they would have to give them their money's worth. A satisfied visitor would not only return himself, but would tell his friends and neighbors of his experiences.

As for the fishing charges, it seemed that $1 per day per person would be reasonable. Family groups of more than two persons would be admitted for $2. John, Jr., decided to rent his boats for fifty cents per half-day and Jimmy decided to sell worms for fifty cents per can of 75, and minnows for $1 per dozen.

The quail-hunting rate was set at $2 per person for a half-day of hunting, or $10 for a hunting party for a full day's rights. Dove and squirrel hunting permits would be $2 per person per day.

The Dakeleys decide to charge $4 per day for camping sites, and to allow the campers 50 percent reductions on hunting or fishing fees. Picknickers would be charged $1 for the use of a table and could use the campsites if they were unoccupied.

With the coming of the first warm days of spring, the fishermen began to appear. Their catches were good, and many came back often during the summer. The bulk of the campers were overnight tourists traveling Highway 630. Most of them had camping trailers, but some pitched tents. The Dakeleys were not surprised when many of the tourists told them how hard it was to find suitable places to camp overnight on a long trip.

Fishermen and campers were

present quite frequently on the Dakeley farm during the first summer of operation as a recreation area. Peak utilization was, of course, on weekends. But many fishermen came before or after work on week-days and occasionally overnight campers stopped during the week. On some weekends, all six campsites were occupied by families from Northton and Westville—families just getting away from it all for a weekend.

With the coming of dove hunting season, the silage had been cut and the millet was ripe. Doves abounded, and, as always, the hunters knew where they were before the season opened. The first day of dove hunting was a great success. The Dakeley farm was to achieve a reputation as a great dove-hunting area. No hunters objected to the $2 fee, for they got all the shooting they wanted.

Squirrel hunting was good. The first ten hunters bagged 46 squirrels. But, as might be expected, the remaining squirrels became wise and consequently the hunting pressure decreased. There was no danger of hurting the population.

Quail hunting was pretty good and many hunters returned again and again. It seemed that while the hunters seldom bagged their limit of quail, they were satisfied in that the habitat looked good and they could watch their dogs work without the worry of getting on posted land. Many of the city hunters seemed perfectly content to just walk over the farm and watch their dogs run. If they should bag quail, this was considered a bonus.

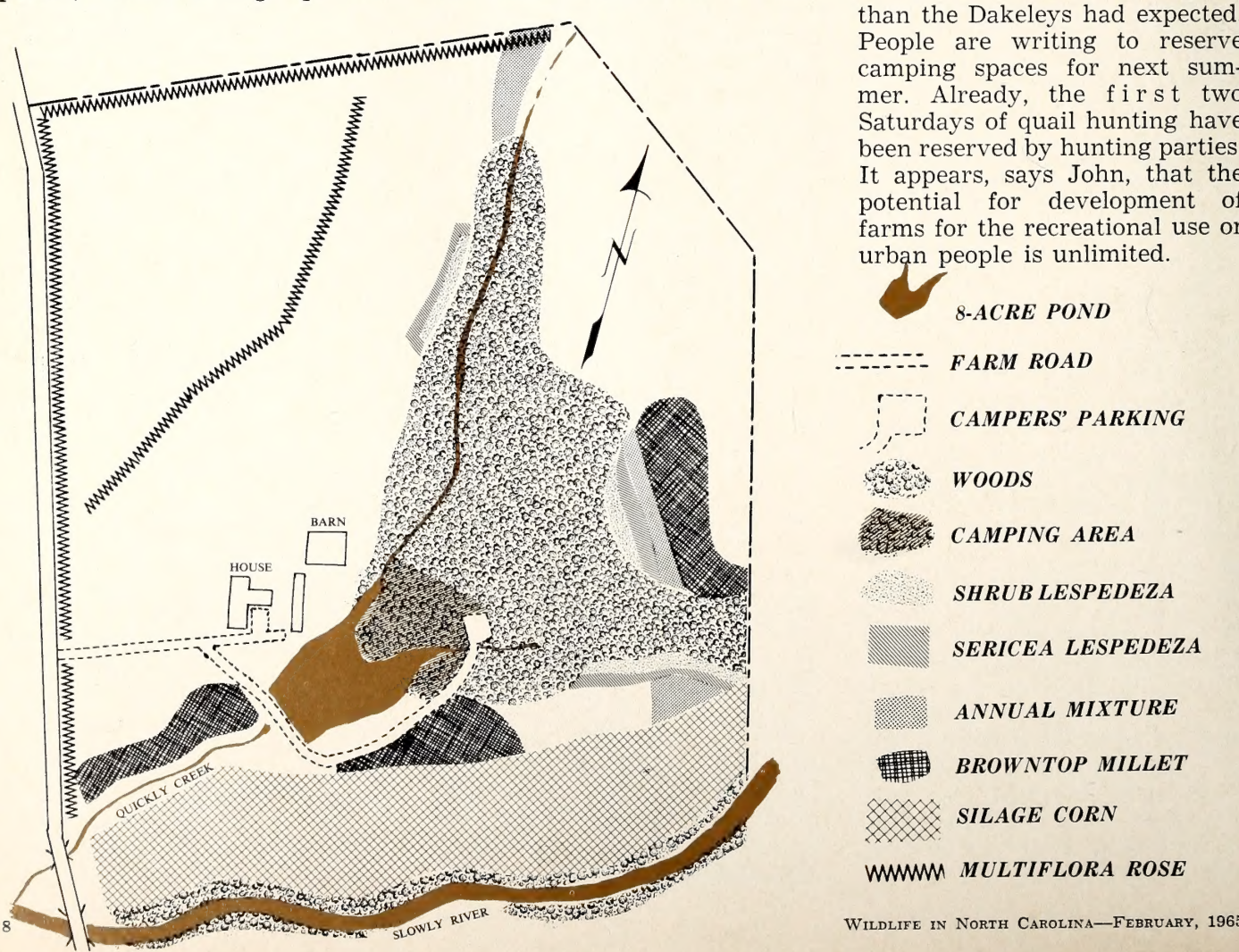
As John had suspected, his new venture was not profitable during its first year of operation. But he was encouraged by the number of people who came to use his facilities and by their favorable remarks. He knew that many of his customers would visit the area again and would tell their friends about their experiences.

The second year of operation was much more successful than the first. Many of the customers from the preceding year returned. Signs along the road continued to attract many overnight tourists to the campsites. People learned of Jimmy's bait sales and they came from near and far to buy worms and minnows. Jimmy plans to raise crickets for next summer and has already set out a row of Catalpa trees.

The fish lake has gained a good reputation throughout the Piedmont. More and more fishermen are coming from farther and farther away to fish.

The quail hunting has been very good. John has learned that by keeping an abundance of food and cover on his farm he can maintain a good population of quail. Excellent dove hunting over the corn fields and millet has attracted hunters from all over the state.

The Dakeleys have had a wonderful experience in developing their farm for recreational purposes. It has truly been a family effort. Future prospects for their farm are even brighter than the Dakeleys had expected. People are writing to reserve camping spaces for next summer. Already, the first two Saturdays of quail hunting have been reserved by hunting parties. It appears, says John, that the potential for development of farms for the recreational use or urban people is unlimited.



The Last Frontier

by Luther Partin

ONE of the last frontiers in game management is the potential small game habitat still undeveloped on Tarheel farms. This is probably the only phase of wildlife management still remaining that has not yet reached the point of diminishing returns. Habitat development for small game species is not hampered as severely by drainage, pollution, and other side effects of "progress."

Dr. Ira N. Gabrielson, while Chief of the U. S. Bureau of Biological Research, was once in such despair over the damage inflicted upon waterfowl by drainage that he was tempted to say, "Shoot the birds, and let us have it over with. It isn't anything but trouble and the ducks are going (to be eliminated) anyway, no matter what we do." But even then he was heartened by the marsh restoration program and followed his pessimistic remark with the hopeful observation that the refuge program, if carried through, could "maintain a flight of migratory waterfowl that will be with us for a long time to come."

Conservation work of this magnitude is expensive to the point of being prohibitive, except through state and national programs. And it is a matter of trying to preserve as much of the population as possible—there is no frontier here; this is a desperate bid to hold the line, with no foreseeable hope of restoring the flyways to their once splendiferous abundance of migrating birds.

The farm scene presents a different picture. Each woodlot is a separate identity. A tract of land can be developed for cottontails and quail without regard to adjacent lands. The individual can do this at little expense with equipment on hand, using wildlife habitat materials furnished free of charge by the Wildlife Commission. This has been called wildlife management in minutia, but the results are anything but minute.

Basically, two materials are available for small game improvements—the annual food mixture and perennial shrub lespedeza. The annual mixture, as the name implies, must be planted each year, and usually matures around the equinox. This arrangement gives small game an early food supply. The mixtures is made up of several different seed producers, all proven favorites. The nature of the annuals tends to reduce their effectiveness as a food supply in late winter, a most critical time for survival of wildlife. Millet, milo, soybeans, and peas, some of the components of the mixture, have a relatively soft seed coat—characteristics contributing to a relatively short period of availability when the seeds are exposed to long periods of dampness. But the annuals produce large quantities of high quality food early in the season and serve to hold small game in the vicinity for our aesthetic and sporting pleasures.

The shrub lespedeza is a slow starter, but picks up the pace quickly and finishes the season going away. It has a tough-coated seed that resists the damaging effects of winter weather. The plant tends to release seed gradually, but regularly, making it extremely valuable in late winter when other food sources may be exhausted. This characteristic may make shrub seed one of the few foods available during a snow. Sportsmen, concerned with small game survival during extreme weather, have reported shrub lespedeza seed on top of new-fallen snow.

Biologists are generous in their praise for the ability of shrub lespedeza seed to keep quail in an active, vigorous condition even during severe winter. Seed analysis shows a good content of vitamins and proteins—both essential for the nerve and muscular systems—and equally complimentary levels of carbohydrates and minerals. Good physical condition at the end of winter, a prerequisite for adequate reproduction, is assured for quail if they have enough shrub lespedeza available and can survive the other hazards of nature.

Cover is a must for small game; successful nesting and protection from predators are dependent upon it. Both the annual mixture and shrub lespedeza should have cover nearby, if the food is to be utilized. The Wildlife Commission also makes available sericea lespedeza, a low close-growing perennial legume that can be planted adjacent to the annuals or lespedeza shrub.

• **continued on page 30**

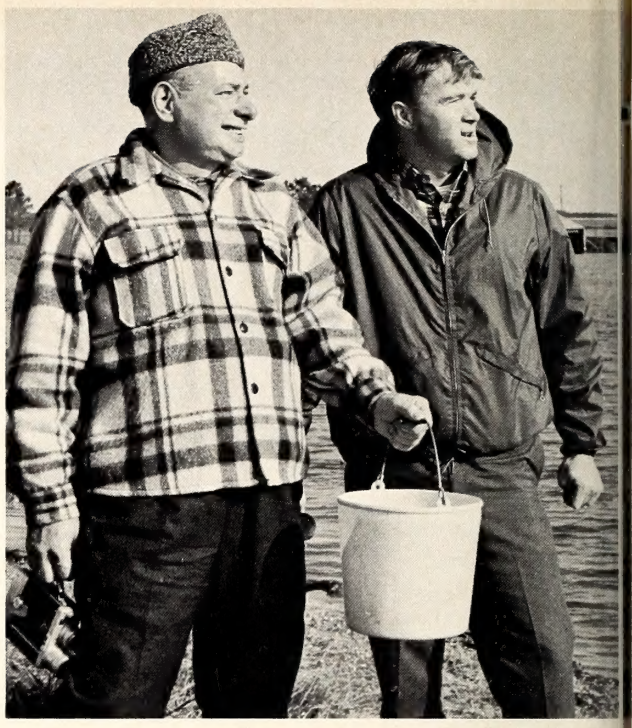
This is the contents of a quail's crop showing the nutrious bicolor seeds which provide the bobwhite with sustaining winter energy and cold weather vigor.

Jack Dermid

The JC Ranch for Ducks and Geese

by George Burdick

Photos by Duane Raver



Author Burdick and Joe Crisanti look over 22-acre pond.

WILDLIFE needs more people like Mr. Joe Crisanti of Chowan County. Three years ago the author met Joe Crisanti and it was obvious to me from the very first that nobody could be formal for very long around this personable "settler."

His charm and way of making you feel at ease has made even the colonial-minded citizens of historical Edenton forget he is a self-transplanted "outsider." As one close associate said of him, "Chowan County took to Joe like North Carolina took the 1956 U.N.C. National Champion Basketball Team." He has spark and nobody wants to turn their backs on something alive.

Thus Mr. Joe settled at the old Marine Base near Edenton and from the very first it was good news for wildlife. He was high bidder for approximately 150 acres of this surplus government property bordering Albemarle Sound. (The Edenton Marine Air Station was sold at public auction in 1962.)

This was the beginning of one of the largest privately-owned and privately-developed waterfowl lakes in North Carolina.

Mr. Crisanti was not a cattleman, so he called on animal husbandry graduates. He was not an agronomist, so he called on the Soil Conservation Service. He was not a wildlife biologist, so he called on me.

You see, Mr. Joe bought this land for, as he put it, "ducks, cattle and people—in that order." Now after being here three years, he has his ducks, his cattle, and people are still welcome too—until they start scaring his waterfowl.

Nobody quite understood what this retired New Jersey businessman was after at first. He was busily engaged in clearing land for pasture, marking off lots, developing his beach area, supervising construction of the Country Club golf course and laying off his vast 22-acre lake.

Skeptics told him many times: "You won't get enough water; it'll seep out underground; it's just a waste of good land."

Mr. Joe would just smile and say, "Don't try to talk me out of my lake."

So the engineers would survey and predict, "Five feet of water is the absolute maximum you may expect at the deepest point." They later changed this to "possibly seven feet."

Mr. Joe's lake passed the nine-foot mark and is now overflowing at eleven feet of water.

Of course, all this water depth in the middle of the lake is not necessarily needed by waterfowl and much of the lake is only about 18 inches in depth. However, the fact that he did get his lake and his water is a tribute to Mr. Crisanti's steadfastness.

He listens to "experts" and then makes up his own mind. When an expert disagrees with him, it's often the expert who is shown to be in error.

Last winter after getting his dams constructed and water in his lake, approximately 1,000 waterfowl, mostly mallard, and blacks, spent several months on the lake prior to and during the migration north. Federal Game Agent George Ross, who lives nearby, banded 217 ducks of various species that were using the lake. (A total of 126 mallards, 82 blacks and 9 others.)

This season, the lake was ready before fall migration south and a late fall visit by myself and River Basins Biologist Tom Olds (U. S. Fish and Wildlife Service) disclosed not only flocks of early-migrating ducks but also approximately 50 Canada Geese.

I could tell that Tom was impressed with Joe and that he also was impressed and pleased with his waterfowl lake. Joe met us at his house and insisted that we accompany him to feed the waterfowl. He feeds them corn by the bushels, not to mention planting 10 acres of browntop millet and having many more acres of smartweed available in and around the edge of the 22 acres of surface water.

We drove up the road which winds around what used to be the end of an aircraft runway and sat in the car for a few minutes. The geese and ducks could be seen from where we were parked but Joe didn't want to get out of the car until the geese had a chance to swim slow-

ly up the lake away from his boathouse, which also contains a wire pen for his pinioned geese and a storage room containing bags of yellow corn.

So we waited; the geese slowly swam further up the lake and then we walked over to the boat house. On the way over, Joe showed Tom and me where he was going to construct an observation room which would be situated below the dam and elevated in order to give a good view of the "lake full of watefowl." This was the first time I had heard of this plan but I had learned to expect anything from our host and wasn't surprised that he would wish to improve on the view afforded by binoculars through his kitchen window.

Inside the boat house, we were able to observe that the geese had eaten most of the corn which had been provided in the open goose pen. Another bucket of corn was thrown out by Mr. Joe, and then as we were leaving, he pointed out a loudspeaker receiver which had been erected on the wall.

"What's that for?," asked Tom.

"Oh that's where I talk to my geese and they answer me back when I get lonesome at night," replied Joe.

Tom looked at him in a questioning way and then Joe calmly continued, "I have a record with goose calls which I play and they answer whenever I broadcast to them."

"You mean you can hear them answer you over that hook-up?" I asked.

"They come in loud and clear," he concluded.

Then we walked part-way around the lake to a feeding spot and put out more corn. During the walk, Tom and I were thoroughly enjoying watching the flocks of blue-winged teal, coots, ring-necked ducks, wood ducks, mallards, blacks, widgeons, and other species of birds. Mr. Crisanti seemed to be particularly thrilled over a flock of almost 50 Canada Geese. The "call of the wild goose" was what he liked.

Later we looked over some more of his property before going to the upper end of the lake to put out more corn. Though there is plenty of natural and planted food presently in and around the lake, the corn is used to make the area so attractive that no goose or duck in its right mind can resist the attraction of water, food and protection.

One side of the lake is pasture and the other side consists of a stretch of upland wildlife habitat, which was planted between the water and a row of piled trees and logs. The debris was piled instead of burned and provides upland game food and cover while providing the waterfowl a degree of sanctuary.

This was all pointed out to us by the proud owner as we again put out a bucket of corn. Meanwhile, the geese never flew from the water but simply swam away from us as we slowly approached. Some ducks would fly but usually just to the other end of the lake.

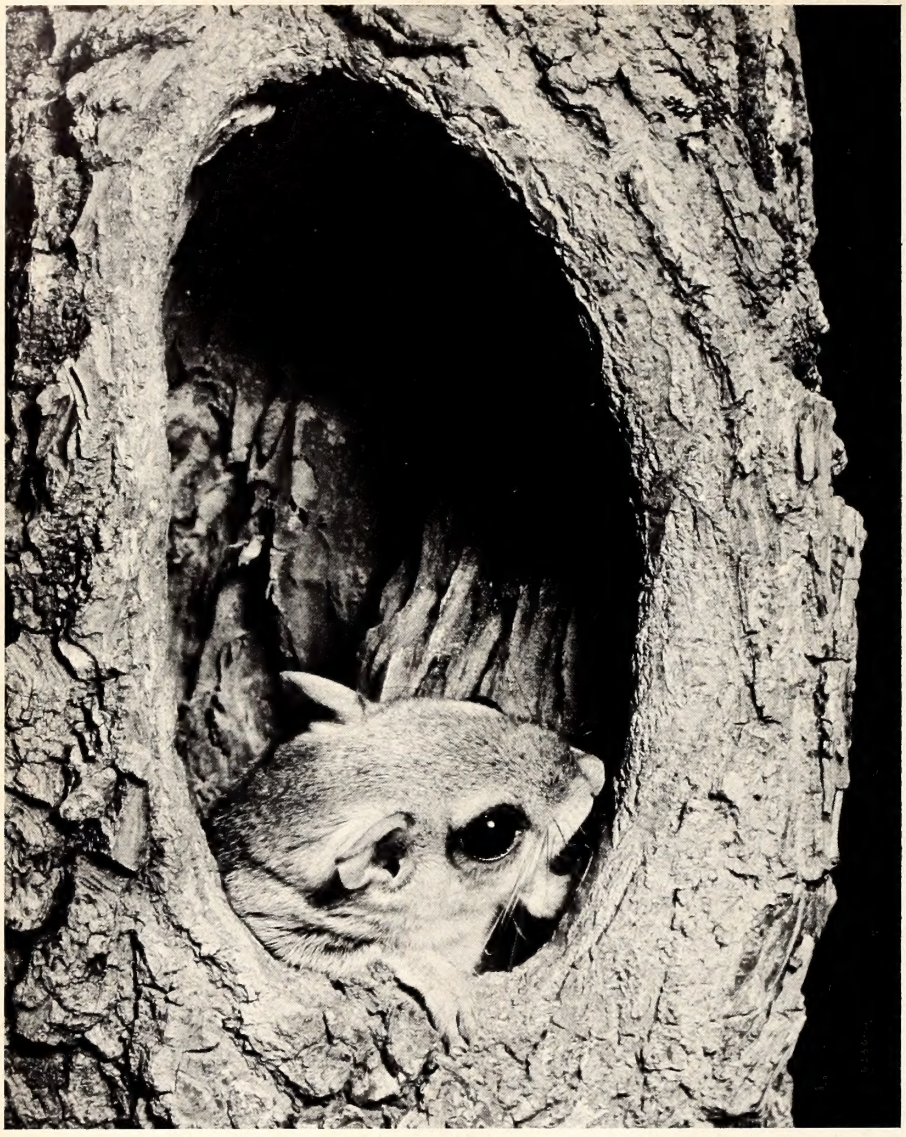
The whole time we were with Mr. Joe, the talk was about ducks, geese, cows, and people, but mostly it was wildlife that was being discussed. These waterfowl are welcome and protected here and the birds are beginning to sense this fact.

Whenever one drives by Mr. Crisanti's lake during the winter season, he is likely to see any number of different flocks and species of waterfowl in the sky and on the waters of this beautiful lake. In addition, other birds such as snipe, egrets, herons, and bitterns are common visitors. There are three small, tree-covered islands in the lake which attract wood duck broods during the summer months. All things considered, its a tribute to a man who was determined he was going to attract wild creatures from the sky to come live with him.

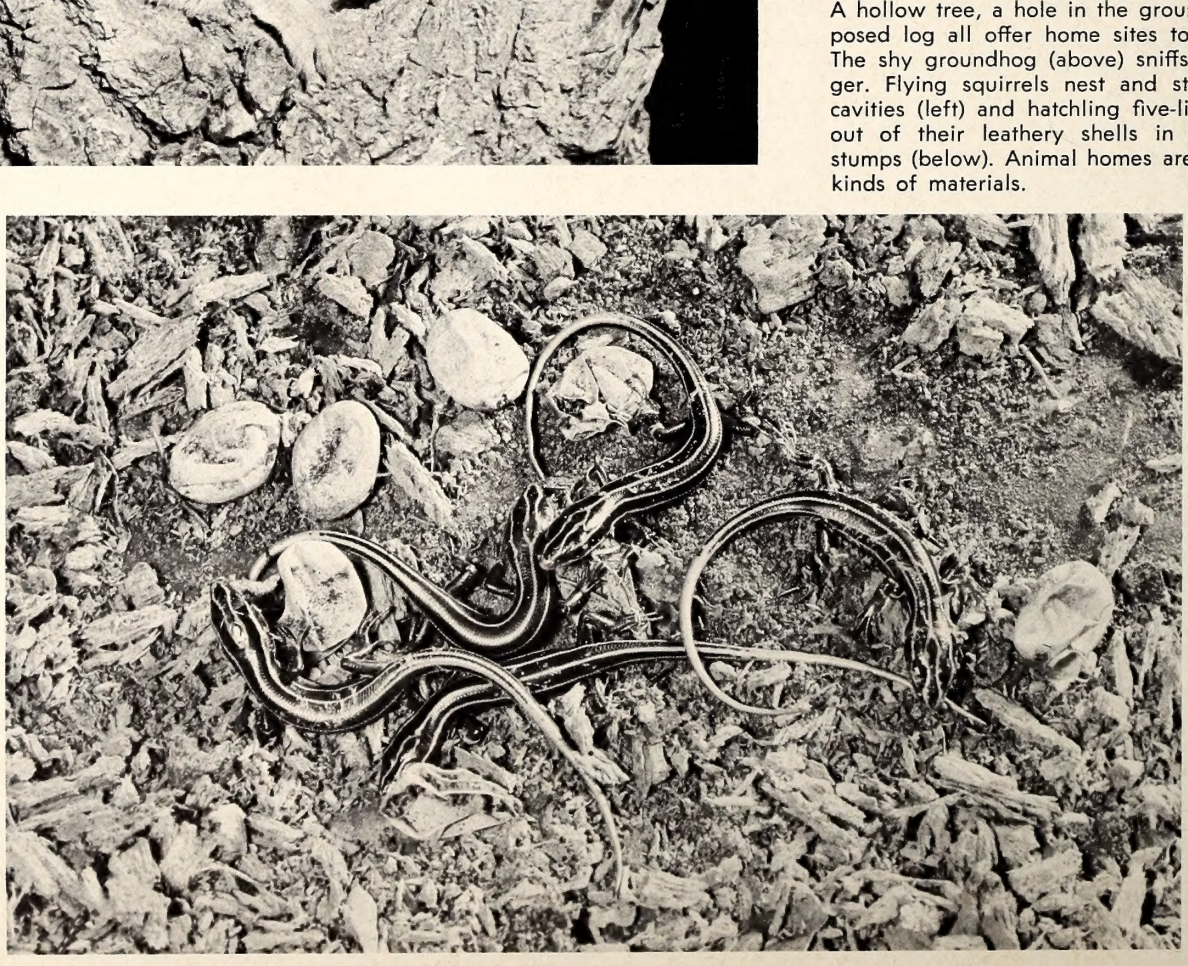
Joe has his lake full of water, choice vegetation and a loudspeaker. He can watch the colorful waterfowl species year round on a body of water which he created. He can listen to the call of the wild goose from within the warmth of his quarters on a cold, wintery night. He can love wild forms without ever shooting them, without ever touching them, without ever disturbing them as they go about the business of remaining wild and free.

This photo was made in late December and the pond was dotted with ducks and geese. The waterfowl were wary but displayed no panic at the approach of the cameraman. The Canada geese were the first to leave the water, but returned.

Animal



A hollow tree, a hole in the ground, and a decom
posed log all offer home sites to wildlife species
The shy groundhog (above) sniffs the air for dan
ger. Flying squirrels nest and store food in tre
cavities (left) and hatchling five-lined skinks brea
out of their leathery shells in rotting logs an
stumps (below). Animal homes are made of variou
kinds of materials.



Homes

Photos by Jack Dermid

Gray squirrels use man-made boxes for nesting (above) and muskrats make their own from marsh grass (left). A spider web sparkling with early morning dew is abandoned by its architect, and a hornet nest, made of chewed wood pulp, protected from weather and wind under a lichen-covered rock ledge.

NORTH CAROLINA WILDLIFE

RESOURCE-O-GRAM

A ROUNDUP OF THE LATEST WILDLIFE NEWS

Most Hunting Seasons End Feb 15

On February 15 the seasons on rabbits, quail, and wild turkey come to a close. Raccoons and opossum may be hunted until March 1 except in and west of Stokes, Forsyth, Davidson, Stanly and Anson counties where the season ends February 1. Most trapping for fur bearers ends February 15, while beaver trapping will be permitted from February 1 to March 1 except where local laws prevail.

Time to Order Wildlife Planting Materials

The Wildlife Resources Commission has available a large supply of shrub lespedeza and multiflora rose seedlings, plus serecia lespedeza seeds and annual food mixture packets for free distribution to farmers. Application for these materials may be made at local Extension and SCS offices, district game biologists and from the Commission office, Box 2919, Raleigh 27602. Personnel of the Division of Game say that there is likely to be enough multiflora rose to supply the demand this year, but all applications will be processed on a first come, first served basis. Distribution of these materials must be completed early in March. After that time seedlings will be past the dormant stage and are not likely to survive late planting.

Film Strips on Birds Available

The Wildlife Commission has available a number of film strips on North Carolina birds, designed for class room and bird or garden club use. The strips contain more than 30 color pictures of a cross section of Tarheel bird populations and may be obtained at $2.00 per strip—the cost of production and handling, and can be projected on most types of slide projectors.

Mountain Trout Ready to Stock

About 700,000 mountain trout have been produced by state and federal trout hatcheries, and will be ready for release in about 2,000 miles of trout streams to be opened for public fishing. The fish, all of keeping size, will be stocked prior to and during the 1965 fishing season.

Effects of Unrestricted Swamp Drainage

by Walter M. Keller

Extension Forester

THE broad classification termed "wetland forests" includes many kinds of woodland, and about all some of them have in common is a profuse supply of water. These wetland forests—about 20 million acres in all—stretch more than a thousand miles along the lower coastal plain from the James River in Virginia to southern Florida. The vegetation of these forests, the soils, the wildlife, and even their uses reflect the hydrology of this vast watery domain. The wetlands are the headwaters for countless streams and lakes, as well as the recharge areas for huge groundwater reserves which provide a fresh-water buffer against the intrusion of salt water into coastal plain water supplies. Moreover, they serve as water storage sites for impoundments serving irrigation, fish and waterfowl management, hydropower production, and sundry other human activities.

The lower, wetter sites where running or standing water is present—at least on a seasonal basis—appear to be consistently associated with tupelo-blackgum-cypress production. The effect of drainage to date has been to thoroughly remove the possibility of retaining this water, thus paving the way for replacement by dryland vegetation associations. In any event, changing water relations through drainage, impoundment, or other means will surely modify the whole wetland environment. The Southeastern Forest Experiment Station in their 1962 Annual Report, and McKnight, Furnival and Putnam in Agricultural Handbook No. 181 in discussing tupelo-swamp blackgum stands, states that: "Artificial drainage will decelerate growth or kill older trees if it permanently lowers the water table. Prolonged droughts cause mortality and induce insect attack."

In deep swamps, both tupelo and cypress seed regularly and copiously. They regenerate well only where seedbeds are moist, where competitors are unable to cope with flooding, and where ground cover is limited to annual herbs. Seeds will germinate even if water subsides as late as midsummer, but seedlings and saplings are fairly intolerant and are not aggressive against other competition. When drainage removes the surface water and dries the site, tupelo and cypress regeneration is eliminated by other competition—most often the less valuable maple-ash-buttonbush association.

Tupelo produces high-quality veneer and lumber, and is the basic raw materials for a sizeable segment of the eastern North Carolina wood industry. Tupelo is also a high stumpage value species, and provides considerable income to farmers and woodland owners. The latest (1962-63) Forest Survey of North Carolina shows 4,230,000,000 board feet of tupelo-blackgum and 1,200,000,000 board feet of cypress in standing timber in the coastal plain area of North Carolina. It is not surprising that commercial users of lowland timber who depend on wetland trees such as tupelo and cypress are seriously concerned as a result of the reduction in swamp areas where these trees thrive.

More than a million acres (Southwide) of wetland forest have already been altered by drainage since 1950, and the end is nowhere in sight. Much of this drainage work has been done by wood-using industries as a by-product of dredging operations to get spoil for building roads into wetland areas. Recently, however, Public Law 566 (PL 566) entitled the Small Watersheds Act has become increasingly important as a factor affecting wetland forests.

Individuals and public agencies advocating drainage of tupelo, cypress, ash, and similar bottomland swamp types are proceeding on very tenuous grounds unless they recognize that they may be doing violence to forest production, and wish to proceed despite this result. Tupelo, green ash, swamp blackgum and similar species appear to thrive under regimes of continuous saturation. These are valuable species, capable of continually supplying raw material industry wants and needs, provided the types are

• **continued on page 30**

Perspective and Philosophy

This is the first chapter of a recent publication of the National Audubon Society, Nature Centers Division, entitled, "Manual of Outdoor Conservation Education." Dr. Shomon is the Division's Director. He was formerly Chief of the Education Division, Virginia Commission of Game and Inland Fisheries.

by Dr. J. J. Shomon

IN our swift exploitation of nature's resources, including now the atom, thoughtful Americans might well pause for a moment and ponder the all-important question: *What kind of a world of the future are we building?* There is some feeling today that those in the scientific, educational and professional resource fields have a very special responsibility here — a responsibility that involves something more than technical competence.

In America we are enjoying the highest living standard of any nation on earth. No country rivals us in creature comforts and conveniences. We have more homes, radios, television sets, cars, highways, supermarkers and gadgets than any other people. As a result of all this affluence, there has been a tendency to believe that we are the best in everything. But times have changed. Now many perceptive people are beginning to question our superiority and supremacy in many fields.

How well have we as a nation, for instance, adjusted our way of life to the living things of the earth that feed and clothe us? To what extent have we safe-guarded our fundamental natural resource base, the source of our economic strength and spiritual vigor? A very brief look at the record will tell us.

First of all, the total soil resource picture in this country remains disconcerting, in spite of much soil conservation progress and what seems to be a *temporary* problem of over-production. Because of neglect we are losing each year to erosion by water and wind many million tons of nutrient-bearing topsoil, and much subsoil. In addition, we are muddying our nation's streams and rivers, silting our reservoirs, riverbeds, deltas, bays.

Susceptibility to erosion continues to be the most widespread hazard limiting land capability and causing need for conservation treatment when land is cultivated. More than 738 million acres of land in the United States are in this classification.

On our water front we are making notable progress, yet we face serious water shortages in many areas of the country.

Our water problems are vast, and revolve around those of quantity, quality, distribution and proper water use responsibility. Each day in this country we make use of more than 200 billion gallons of fresh water. This is roughly some 1200 gallons per person per day. This is equal to about one-eighth of the total yield of our nation's rivers and underground water sources. By the year 2000 our water needs are expected to rise three-fold. Meanwhile, each hour we continue to pour raw sewage and industrial wastes into our nation's watercourses, endangering human health, weakening or killing plant and animal life. So serious is the problem that many of our once most notable rivers are now nothing more than open sewers.

The forest supply of the nation, while more adequate than the supply of some of the other natural resources, is far from what it should be. After more than 50 years of scientific forest management, we continue a heavy drain on our better saw-timber. What's more, we burn too many forest acres, each year, continue to mismanage forests, particularly small private woodlands, and lose vast forest acreages to insects and disease.

The situation concerning our wildlife resources is not encouraging from several stand points, except for a number of species

"Meanwhile, we continue to pour raw sewage and industrial wastes into our nation's watercourses, endangering human health, weakening or killing plant and animal life."

Jim Lee

such as deer and antelope. During the past two centuries America has lost to extinction 20 species of wild mammals and birds. Another 57 species of wild birds and mammals have been dangerously depleted; so have 15 species of important fishes. Overexploitation of animal numbers and destruction of food and cover are the main reasons for the dwindling wildlife supply. Even though game and fish management have become more nearly an art and science, the overwhelming weight of decimating forces, brought on largely by human over-population and land and water mismanagement, have caused many forms of wildlife to decline.

As far as our mineral resources are concerned, these, too, are rapidly being depleted, endangering our very survival. According to the President's Materials Policy Commission report, which many regard as a sound mid-century appraisal of resources, our nation's reserves in fossil fuels and in iron and other metals have reached a dangerously low level. Unless new sources of supply, substitutions or new forms of energy are soon discovered or developed, we stand on the verge of being a "have-not" nation. In some respects we are a "have-not" nation in relation to about 20 essential metallic minerals, and each year our importation of oil climbs alarmingly.

Today it is becoming increasingly clear that as a people we need spiritual vigor as well as physical vitality. We are beginning to see that man cannot live by bread and gadgets alone. His body may yearn for satisfaction of certain biological needs and comforts, but when these are satisfied, momentarily, and the mind is free for the reasoning and creative process, there remains something else. There is still the eternal search for spiritual achievement, peace of soul. Man needs the esthetic in life to feed his being or he is soon dead. He needs the beauty of lands and waters, to have his heart stirred by wild creatures and wild places. He needs the exhilaration of fresh air in his nostrils, the clear vision of unspoiled wilderness lands before him. Man's need for a sense of balance and order and for things in their proper places in the environment constitutes one of the strongest reasons for conservation.

Within a few short generations we in America have changed our way of life appreciably. Our forebears largely used their hands and muscles to make a living. Today most earn their livelihood with their brains aided by push buttons and computers directed from swivel chairs, only to come home to a night of passive entertainment and physical inactivity. No wonder the American people are consuming, according to a Congressional sub-committee report, some $280 million worth of tranquilizers each year.

"The situation concerning our wildlife resources is not encouraging from several points, except for a number of species such as deer and antelope."

Joel Arrington

Jack Dermid

". . . yet we face serious water shortages in many areas of the country."

Juvenile delinquency is an increasingly serious problem. The nation's crime rate is up four times that of the rate of population growth.

Recently General L. H. Renfrow, deputy director of the Selective Service, said easy living habits are steadily reducing America's stamina to the danger point:

"Civilizations have disppeared when they lost the central core; strength, incentive, vitality and stamina necessary to withstand strain and extreme shock in emergencies. No one can estimate what the automobile has cost the American people in muscle, or the radio, television and motion picture in active participation in recreation."

Still more recently, Ernest Swift, noted conservationist-writer, sounded this warning:

"Our young people are more

in need of sunburn and callouses and a healthy appetite than they are of psychiatrics and more play. With 52 percent of our young manhood as military rejects we had better take dead aim at some of the serious defects of our affluent times. They can't all be scientists nor do they want to be; and some earthy experience for budding scientists is certainly not a waste of time."

One of the more difficult problems we face today is the resolution of conflicting uses of natural resources. Can necessary exploitation of resources co-exist with preservation of some natural areas? Must all areas yield to crass commercialism? Just as there are essential values in having steel and paper mills, are there not also essential values in having natural lands or semi-wild areas? The present fight over billboard advertisement on the interstate highways system is one example of this conflict of interests. Another example is the struggle for open space and wilderness preservation. Another is the current fight to preserve the remaining redwood stands in California. Still another is the intense competition that is developing over the uses of water and water areas.

Clearly, then, these struggles show that there is interest among people and groups to safeguard our natural environment. The problem ahead, however, lies *in transferring what is needed into what is really wanted* by the body politic. It is here where our whole conservation effort breaks down. Not enough people "want" to do something about conservation. The need is usually evident, people in general are in sympathy with the idea, but at this point natural resources conservation comes to a standstill.

The conservation problem that we face is largely one of human resources, or social resources, and not so much one of natural resources management. It is a problem of human resolution rather than one of mere economics or manpower. Somehow we must *want* to do more as a people than we are doing now. The science and technology to raise our nation to a high and sustained natural resources level are available to us. So are the means. Lacking seems to be the motivation. Here is where the emergence of a pervasive ecological conscience within the American people can provide the motivating force that is needed to get the conservation job done.

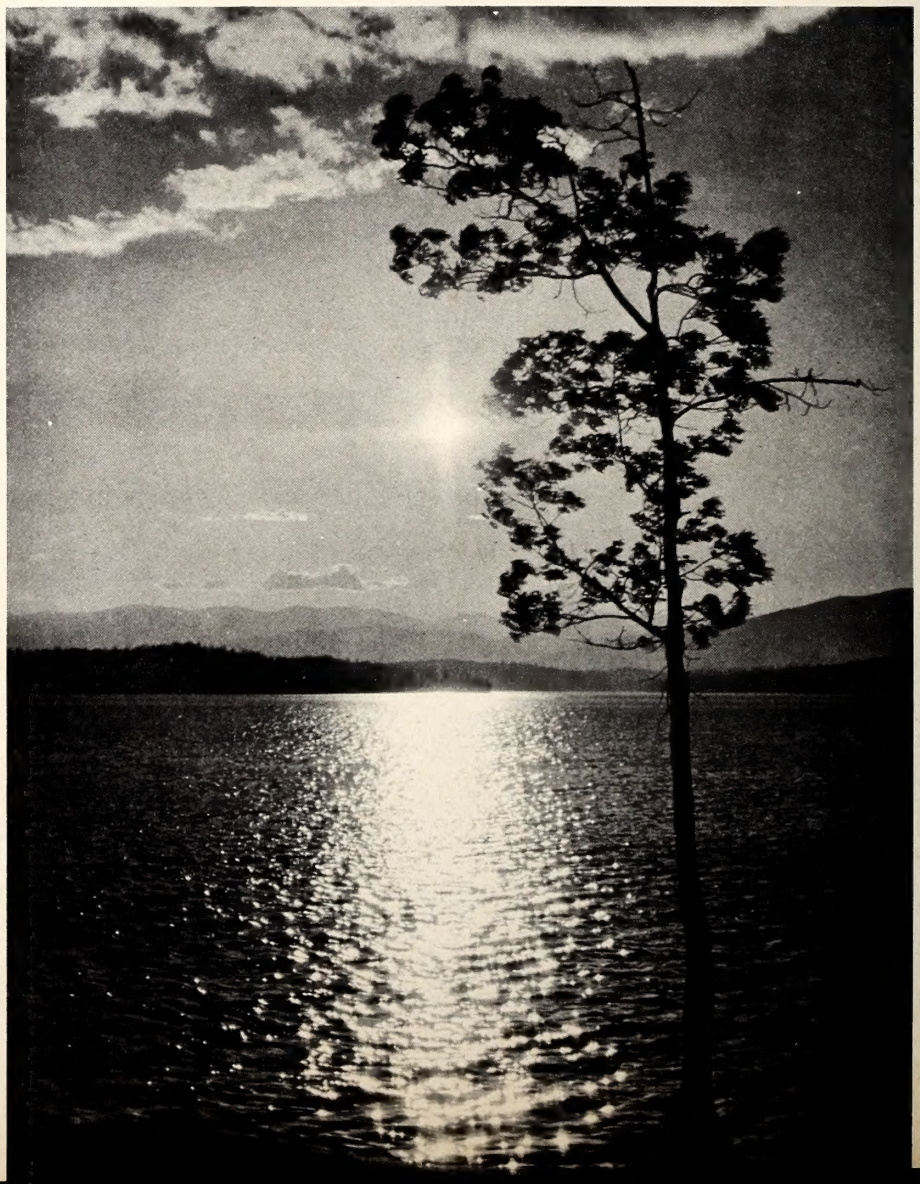
To talk of an outdoor philosophy may appear to some as useless sentimentality. But the question arises, *is sentiment as powerless as it may seem to guide a nation toward a nobler purpose?*

Modern conservation, to many, demands something more than money and men. It demands an appreciation for intangibles. It demands a special feeling for the earth, for beauty and order and for all things that share life with us. The late Aldo Leopold had this in mind when he talked about a land ethic. Dr. Albert Schweitzer, in his philosophy, speaks of reverence for life and compassion for all living things. Joseph Wood Krutch also makes the observation that without sentimentality conservation alone is hardly enough.

One presumes that there exists within us a fundamental purpose in being, a sense of gratitude and ways of expressing it. In America we have been generous in our regard for the unusual men of the past who have helped build our nation. But we must remember that much of their greatness was due to the lavishness of our land. The early Greeks worshipped their gods who gave them land, beauty and grain. Is it foolish for us, in our enlightened time, to exercise good stewardship toward the things of our planet?

". . . . there is interest among people and groups to safeguard our natural environment. The problem ahead, however, lies in transferring what is needed into what is really wanted . . ."

Jack Dermid



Shotgun Clinic

by Bodie McDowell

John Page

Jim Mackenize and Protector T. Marshall Daniels (above) work with youngsters before they fire. Protector Bruce Byrd (right) posts 10 commandments of gun safety in Piedmont Shooting Club headquarters prior to shotgun clinic in Greensboro.

Youngsters (below) watch a skeet exhibition during a morning session of the club's shotgun clinic.

PARENTS attending the first annual Shotgun Clinic at Greensboro's Piedmont Shooting Club in late October of last year, were high in their praise of the event sponsored by "The Greensboro Daily News" and WFMY-TV.

"It was the best dollar I ever spent."

"I'd like to see three or four of these clinics every year."

These were just a couple of comments made by parents of some of the 204 youngsters taking part in the clinic. The morning session went over 100.

While each child had an opportunity to fire 10 rounds from a shotgun at a flying target, the primary purpose of the clinic was to instill in the youngsters a desire to learn and practice safe shooting habits.

The North Carolina Wildlife Resources Commission cooperated by having John Parker, Outdoor Safety Supervisor, and wildlife protectors Bruce Byrd, E. R. Jarrett, and T. Marshall Daniels on hand to talk with the youngsters and aid on the firing line. Parker used a slide series to illustrate the do's and don'ts of gun handling in the field and home.

State trap and skeet champion Jack King of the host club joined other club shooters and representatives of major arms companies in an exhibition of skeet and trap at each session.

Assisting with instruction were Wilbur Baskerville and Les Webb of Remington, J. D. Formyduval of Winchester-Western, Jim Mackenize of Savage-Stevens-Fox and Jim Dotson of High Standard.

Webb, in speaking to each group, stressed the fact that shooting under proper supervision is a safe sport.

"I don't believe you will see a record anywhere of a fatal accident on a skeet or trap field operating under the National Skeet Shooting Association and the Amateur Trapshooting Association," he said. "And to my knowledge, there's never been a fatal accident on a rifle program under the National Rifle Association affiliated clubs."

DOG: Man's Best Friend

by John P. Hardister

Jack Dermid

DOGS are "man's best friends." For thousands of years these intelligent animals have faithfully served mankind as a companion and by guarding his home and property. Approximately 8,500 dogs served in the "K9 Corps" of the U. S. Army during World War II. Today, bloodhounds track down criminals and seeing-eye dogs lead the blind. Since most dogs are instinctive hunters by nature, they are used by man in the pursuit of wild game. Indeed a successful hunt often depends upon the keen nose of man's four-legged hunting companion.

Practically all breeds will hunt. After all, the dog (*Canis familiaris*), the coyote (*Canis latrans*), and the wolf (*Canis lupus*), sprang from a common wolf-like ancestor but a couple of eons ago. Realizing the full potential of the "hunting" dog, man has produced about 43 recognized breeds — pointers, setters, retrievers, spaniels, and hounds of various kinds. And then there is the love and devotion shared by a boy and his dog. Dogs have become personal property and they are inextricably woven into our economy. The loyalty, devotion, and service of our canine friends cannot be denied, yet underneath these desirable traits lurks a menace to man's welfare that is masked when domestic dogs receive proper human care and devotion.

This menace is a "return to the wild" state that is borne of necessity and manifests itself when dogs are neglected by man or are deserted and left to fend for themselves. These *uncontrolled* dogs, driven by a strong will to survive, return to the ways of their ancestors and by their very nature are a serious threat to one of the our most valuable natural resources — wildlife.

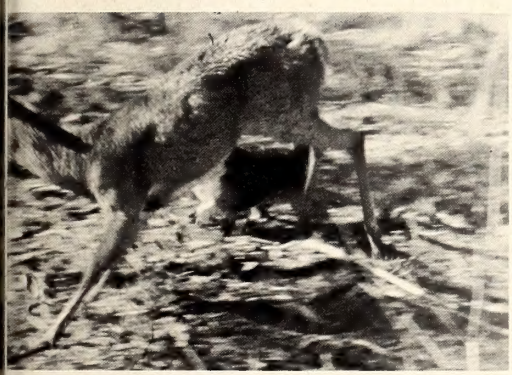
EACH year free-ranging dogs account for the death of an incredibly large number of game animals in North Carolina. Deer are frequent victims because their scent is strong and almost any mongrel can follow it. A conservative estimate of the number of deer killed annually in this State by uncontrolled dogs may be placed at well over 1,000 animals. In some areas the number of deer killed by dogs may exceed the number taken by hunters.

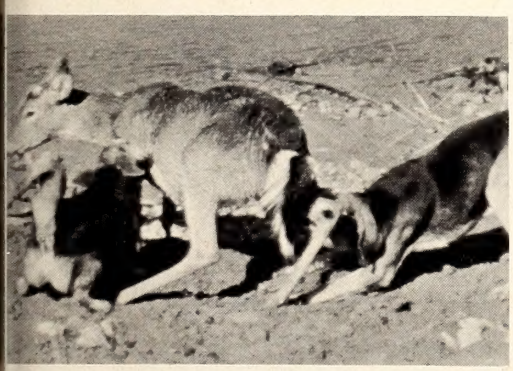
The problem is not a seasonal one. Dogs kill deer the year round. Does, heavy with fawn, are particularly vulnerable to attack. Weakened by their pregnant condition they easily fall prey to packs of dogs. Fawns may lack scent at birth but they are not spared by dogs once the fawns follow their mother. A mature deer in good physical condition can usually escape from a single dog by swift flight and can even out-fight him when necessary. But a deer is no match for a vicious pack of free-ranging dogs.

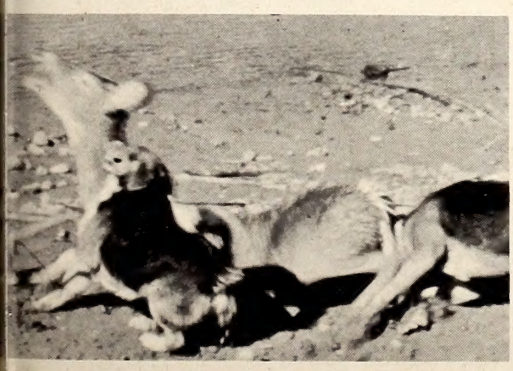
A recent survey of deer herds in the western part of the State pointed to concentrations of deer on and immediately surrounding the wildlife management areas. More, and in fact most, of the remaining land surrounding these areas is capable of supporting deer but the herds are spreading very little. Why is this? The answer is simple and can be summed up in two words: uncontrolled dogs. On the management areas where the deer are protected from free-ranging dogs, they are abundant. But where this protection does not exist, deer do not usually appear in appreciable numbers.

Many Tarheel sportsmen would like to be able to purchase a seasonal state-wide big game permit instead of the daily permits now issued on the management areas. The introduction of the season permit system hinges on the expansion of our deer herds and this expansion cannot be expected until something is done to curb self-hunting dogs.

UNCONTROLLED dogs and house cats bring heavy destruction upon small game, particularly during the breeding season. Ground nesting species such as quail and rabbits suffer greatly. Many of us have seen the crushed body of a small rabbit whose life was snuffed out by a free-ranging dog or have observed a quail nest where all that remained were a few feathers and broken eggshells. When hunters fail to find many rabbits or quail they often point to the fox, the hawk, the owl, and the bobcat as the the culprits. Where these predators are exceedingly abundant they may be considered a minor threat to wildlife populations but as a whole, they are a necessary part of the natural environment and play an important role in maintaining a proper balance between predator and prey.







This series of stills from a motion picture were obtained from the Georgia Game and Fish Commission. It happens here.

The sportsman seldom realizes that the true killers may be his own unleashed, four-legged hunting companions or his neighbors mistreated dogs. Natural predators become the scapegoats and are killed at every opportunity, while the real culprits remain at large to continue their depredations.

Recently I was attending traps set for the capture and banding of mourning doves. Birds thus tagged yield valuable scientific information when the bands are recovered and reported by considerate hunters. One afternoon all the traps had been turned over and destruction was all around. When the remains had been gathered, 12 mourning doves lay in a heap—a daily bag limit for some resourceful hunter. The birds had not been eaten, only killed and maimed by free-ranging dogs.

Undeniably these birds were trapped and escape was almost impossible; yet this incident points out the destructive nature of the dog and that dogs will readily kill wild creatures at every opportunity. The local wildlife protector slowly shook his head as he surveyed the scene. "Yes, its a shame and disgrace," he said. "I often find the carcasses of rabbits, quail, deer and other wildlife species that have become victims of free-ranging dogs." Examining the characteristic tooth-puncture marks on a dog-killed dove he continued, "Legally, there's nothing I can do, although we often ask owners to leash or pen their pets whenever we find evidence of wildlife depredations caused by dogs."

Even when uncontrolled dogs fail to kill small game outright, their presence often leads to nest desertion. Mosby in Virginia credited free-hunting dogs as being most responsible for the desertion of turkey nests. Of 40 wild turkey nests, 57 percent failed to hatch, with desertion amounting to 31 percent. Stoddard, the foremost authority on the bobwhite quail, lists the uncontrolled dog as a serious disturbing factor of nesting bobwhite quail in the Southeast.

YOUR Wildlife Commission is now engaged in an intensive program designed to restore the wild turkey in areas where few or none existed before and to increase the numbers of birds where they exist. For years the small game habitat restoration project has aided the landowner in the establishment of more and better wildlife habitat for rabbits and quail. However, one of the foremost questions confronting the biologists working on these projects is, "Can we increase wild turkey flocks and maintain small game populations in the face of free-ranging dogs?" The answer to this question is yes *if,* and only if, the citizens of this State will take measures to control their dogs and cats.

Actually most people don't realize the extent to which our wildlife resources are being depleted by uncontrolled, free-ranging dogs. When confronted with the destructive nature of the dog, the owners answer is almost always the same. "Not my dog. Why, we've had him since he was a pup. He wouldn't hurt a flea," is often the reply. Many people recognize the uncontrolled dog problem but fail to realize the seriousness of the blow dealt wildlife by free-ranging pets. Others realize the destruction that takes place but either don't care about wild creatures or they are too lazy to control their dogs, or both.

Today most items which do not have a direct dollars-and-cents value are considered by many persons as being unimportant or are completely ignored. Wildlife often falls into this category. We must come to realize that our wildlife resources must not be measured entirely on a dollars-and-cents basis. While North Carolina's wildlife resources net her citizens approximately $1,000,000 annually, esthetic values are also involved which will not put bread on the table but which make life worth living.

Wildlife is an integral part of our life whether we realize it or not. With more and more leisure

• **continued on page 31**

Old Handsome

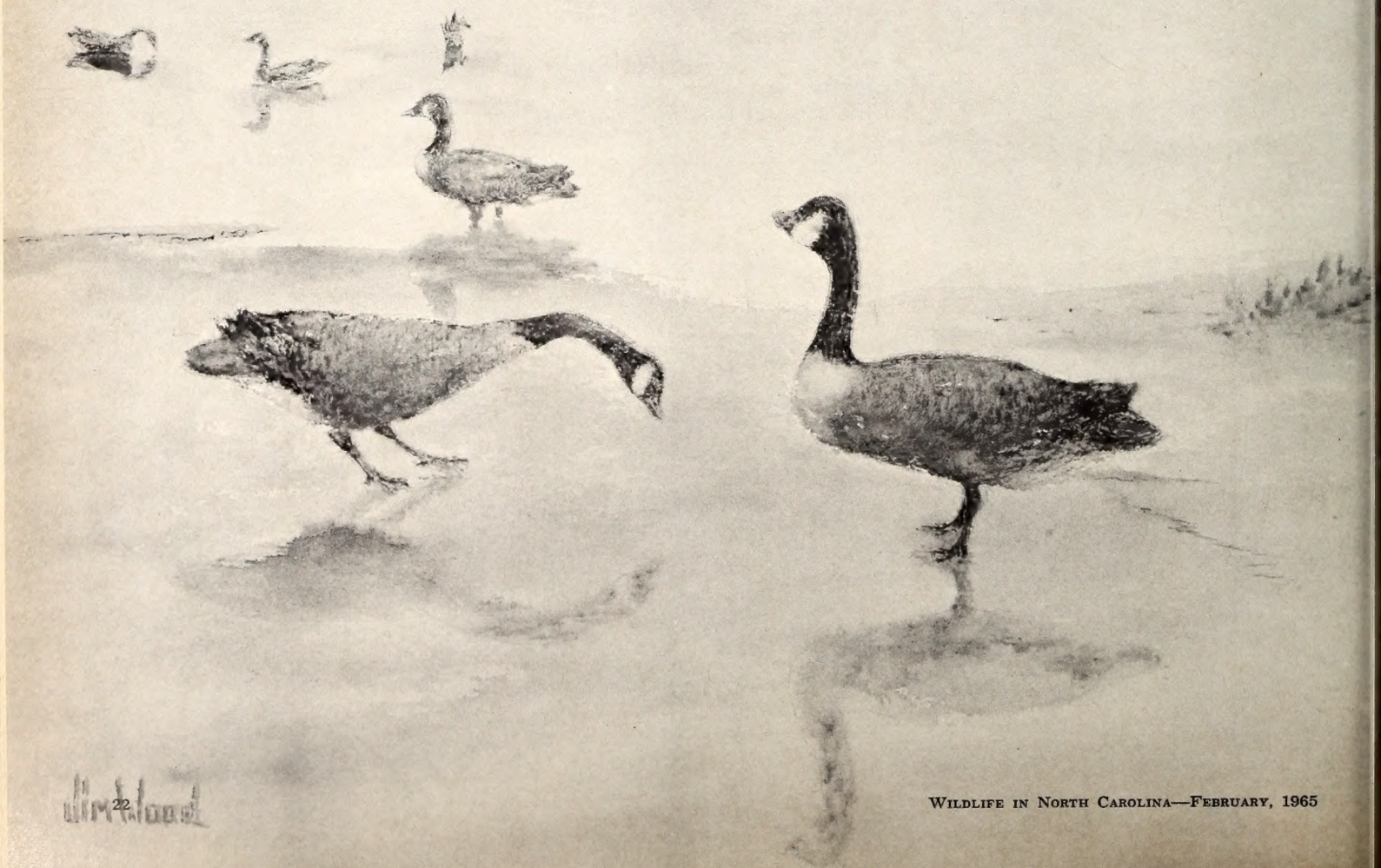
by Jim Wood

IN the spring, toward the latter days of March, the folks around the Merrymeeting Bay country of Maine get a treat. The big Canada geese cover with their handsomeness the flats built into the bay by the rush of six rivers that feed it. They laze in the safety of spring, straightening and oiling their conservative jackets, flop the water stretching big wings, and pick at the sparse rice left by the duck flocks of autumn. They might decide to fly on up to the island refuge in the north bay to graze in the pastures planted there for them. They are tired mostly, the trip far up from the long string of sand that makes the outer banks of North Carolina and Back Bay of Virginia, and the stay in Merrymeeting sometimes stretches into a couple of weeks.

Some with the urge of nesting strong in them leave in a couple of days. They come forty thousand strong sometime and the people tramp the shores, or drive along the crests of the rolling hills, to look, to marvel, and wonder. The hunters are among them grumbling at the strange ways of so many geese for curiously the geese fail to come to the bay in these numbers during gunning season. In years gone they did, but have changed their ways. It is not certain whether they take another route to the south or pass over during the long nights. They well know the bountiness of this famed bay but come to it only when they can enjoy it.

Who knows why? The reasons are locked in the minds of these fabulous waterfowl to whom men have raised their heads and looked in speechless awe for a thousand years. The big flocks, their V shapes sometimes a bit loosely disciplined, but always under the watchful eyes of their elders. The elliptical gabble makes men open mouthed as they come high and and swing into a great circle and settle heavy bodies into the waters, after they are quite satisfied it is safe.

He is a handsome bird all right. The black sleekness of his head and neck turning to purple in spots as the sun strikes it, and eyes of almost witty intelligence. The jacket a subtle brown and boots black. The most dignity that you can find in a waterfowl is under his feathers, and if I didn't know his ways I would immediately tag him just on appearance as a gentlemen to whom



many women listen; but he's no ladies' man. He picks a goose until death parts them, and should this happen he might select another.

What in these wavering formations make men stand and follow with squinted eyes as long as they can see them? Maybe it is the sadness of going to far places, and the excitement too. Aircraft have been as much a part of my life as wearing shoes and I yet stand and watch a plane until it is gone in the haze of distance. The sea has been my home for long days and nights and despite all I have known I can stand on the shore and watch a ship until it clears the roads and is well underway to the sea. A feeling akin comes to me watching the fast moving flocks of g e e s e. Thoughts of far and lonely places and tough land, and I respect these birds for going there where the wind is furious across the bitter land, and the men and women who live there know the harshness of living.

Who can doubt the mind of a wild goose? No one who has known him or tried to. His dignity, wariness, a n d manners point only to intelligence. The man who perpetuated "silly as a goose" left only a measure of his own intelligence for us to examine and this wasn't much. I wish we knew him and maybe it is best we don't. The quiet devotion of a pair of geese was just unfathomable in his small world. For nothing fits the Canada goose worse than "silly." A New Jersey man used a big roll of wire one year to trap a couple on his place to pen them for the winter. Next fall, planning the same tactics, he got the wire roll. The geese were gone in an instant and he never was able to trap them. Did they remember the previous entrapment? Without a doubt they did; a smartness found under the feathers of no other birds.

Each spring the quietness of the marshes and wetlands far in the north is broken with their chatter as they wing in and begin pulling at the very grasses they knew in gosling days. They come as sure as the salmon comes to the rocks of the river that spawned him. Quickly the nest is finished on the dampened ground and up to ten eggs put into it. The goose is there sitting on them and fussing over them for 28 days, the gander is not far off. Since the goose is not a predictable homemaker, nests are sometimes made on a cliff, and at times where an osprey had his nest. Nests of eggs in museums vouch for this double intent and it is interesting to speculate on the amount of feathers flying when osprey and gander disputed.

The consistent trait of coming home has allowed people to create their own flocks of Canadas, one of the most famed built and watched over by Jack Miner and now by his sons in Kingston, Ontario. Jack is dead now but the geese are there, a living memorial to the man who loved them. People come in numbers that exceed the geese to see this remembrance to a good man who will not die as long as geese fly.

Another memorial to a man who loved the geese is our own Gaddy's Wild Goose Refuge at Ansonville. Here on the acres of the late Gaddy the wild goose is often not wild. He knows he's among friends. So you don't have to go too far to see a goose. It is not unusual to see small flocks lazing about farm ponds as you drive the bay country of North Carolina and Virginia. Many cities have built sizeable bunches in park ponds to the delight of their visitors. On all the flyways, Federal and State wildlife refuges offer possibly the best chance to see concentrations of these magnificent fowl in the wild state.

The summer is almost through, the goslings can now fly, and the first bitterness of winter has touched the land. The old gander knows it. His schedule is not as arbitrary as the snow goose whose arrival in the Carolina sounds can be determined almost to the hour. He knows when the time to go comes, rounds up his little bunch and lifts from the water with his friends, the southward course determined by a direction finder far older than the compass. They push on, the leaders keeping those close in the night; then they are tired and must rest. Coming to the place they warily let down and the boss ganders post sentries while they slake their thirst and hunger and work the weariness of flight from their wings.

Now is the time of gunning, the months of the troubled moon for the geese and some will die. The men waiting down there in the khaki drabness are searching for a Christmas goose, but despite their intent most of them love and admire these birds and do what they can for him. Some whole families will perish in the angry lead when their leader goes down and in their confusion and devotion they circle the violent grass until the mate is gone and then the young ones. They fly on into the dangerous land with a purpose close to fanaticism, and soon they see far ahead the pitiful bit of sand that stands up to the Atlantic keeping it from the sounds of the Virginia and Carolina coasts.

They leave the angry waters behind them that have torn ships to bits for hundreds of years and cross the thin line of sand, skirting the old Coast Guard station still standing in its ruggedness. On toward the sound, and lower. A fisherman spreading his nets to dry and to rinse them of salt beside a weathered house amid stunted trees, squints up at them without emotion. He knows this country is tough too but he loves it just as those up there in the misting rain.

The Skipper

Conducted by John Parker

WE have mentioned that if your trailer (and boat) were to be stored during the winter months, a certain amount of preventive maintenance should be performed. The reason for this work, as you may recall, is to reduce or even eliminate next season's problems. Some of this same work may be needed if you intend to be a year round boater. In short, your boat, motor and trailer may need a pep pill before a winter's boating is over. With a well-equipped boat in good repair, there is a lot of boating fun awaiting the boatee who takes winter in stride.

There are good reasons to be on the water during the winter months. A few of which may be crappie or walleye fishing on Fontana, searching for bass just anywhere, putting out decoys on Currituck Sound or trolling for stripers along the Umstead Bridge.

It goes without saying that there is little if any traffic at this time of the year. This is usually considered an advantage. However, the unlucky fellow who didn't figure his fuel consumption quite right will have to look a little harder for a tow. Since the chances of being the only boater for miles are greater in winter, it is certainly advisable to use more preparation, more caution and more of all those things that make up safe boating.

One of the basic differences in warm and cold weather boating concerns the preparation involved for personal comfort. I would not attempt to tell a long-time duck hunter or sea trout fisherman how to dress. Chances are they have long since learned this. Suffice it to say that insulated underwear, insulated boots, a proper amount of top clothing and a parka can make the trip more than bearable and usually downright enjoyable. An old saying worth repeating is—you can always remove excess clothing but you cannot put on what you don't have.

In cold weather it is most important that you stay dry. If your outer clothing is not waterproof or highly water resistant, I suggest that you take along rain gear, even in fair weather. Flying spray can wet the unprepared boater just as thoroughly as rain. Since rain gear is windproof, there is an added bonus in using it. I believe most agree that once you have licked the wind problem, you have the problem of being cold half overcome also.

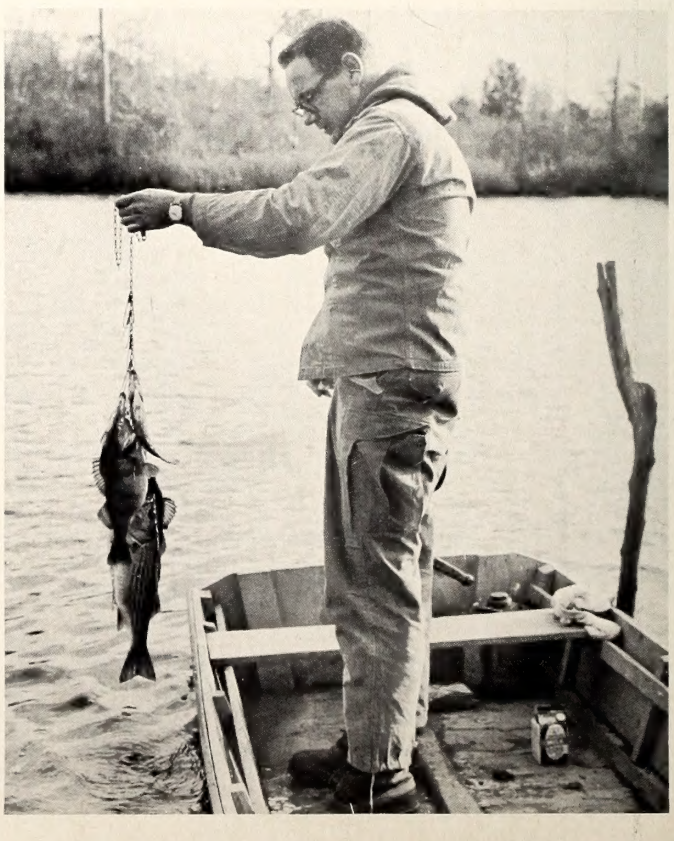
A pair of oversized rubber gloves will come in handy for picking up decoys, pulling the anchor, and, of course, in a cold downpour they will keep your other gloves dry.

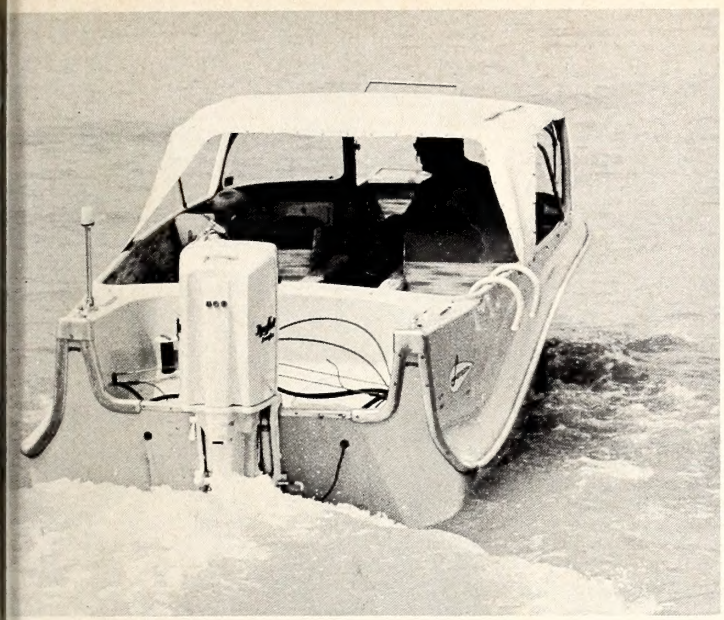
Although I find that the windshield is a bit of a nuisance on a small fishing boat, it is certainly a welcome addition to any boat come winter. You can get an idea of what a windshield can do for you by sticking your head out of a car window (with someone else driving) at 20 mph and when the temperature is down around 35°. Of course, the more closed in your boat is, the more comfortable you will be, especially on extended trips or in cruising to and from hunting and fishing grounds. You can carry this a step further with convertible tops and side curtain. It is surprising how homey a layer of canvas can become during a downpour. Any camper will vouch for that.

The fellow with the day cruiser and the closed-in cabin or hard top rig has quite an advantage over the guy in the open boat. The cruiser may not offer as much open space to move about in, but is much more comfortable when the winter winds blow. However, the man with an open skiff is not at a complete loss. Your personal foul weather gear does not have to take the brunt of winter's attack. A few dollars worth of canvas, a light frame (dowel rods, aluminum tubing, etc.) and an imagination can turn a lot of wind and spray.

What about another or supplementary approach to old man winter's bite? There are safe boat heat-

There may be patches of skim ice on this coastal creek, but the winter angler has scored with yellow perch, striped bass and a crappie. The wooden boat took quite a scraping.





A canvas top and plastic side curtains make this outboard cruiser adaptable to brisk weather. Be certain that the windshield is kept free of "fog" or ice which might hinder the view.

ers on the market and I would strongly suggest that you look into these, rather than use a bucket of charcoal. Granted there are various home-made arrangements, but best use these after you step out on the bank. The boat heaters that I have seen average between $10 and $25 and use alcohol or bottled gas for fuel. The Coast Guard recommends against using gasoline heaters.

Speaking of heat aboard a boat, there is another subject dear to the hearts of cold weather boaters and that is hot food. There is not space here for a course in outdoor cooking or the type of stove to use. But as is true with heaters, there are suitable stoves for small boats and you may wish to check with your marine dealer on this. Regardless of what stove or heater you decide upon, always follow recommended procedures for use and installation and, of course, carry a fire extinguisher.

If you don't want to bother with stoves and cooking, don't forget that a thermos full of hot coffee or tea and another filled with one of your favorite soups can be another easy way to make the day a little brighter.

As you know, there will be periods when old man winter will temporarily retreat and the comfort items mentioned above will not be needed. When the weather does warm up, winter boating differs very little from summer boating, except that the water will still be cold and that's the thing you must watch.

The Wildlife Commission's boating accident records show that the highest death rate per accident occurred during months when the water temperature was lowest. Most of those accidents were of the man-overboard-type or involved a capsized boat. Cold water, then, is the main danger in winter or spring boating. That is, of course, if you go overboard or if your boat overturns. If this happens to you, the best thing I can suggest is to get out of the water as quickly as possible. Get dry as quickly as you can and keep moving. When we consider that the average person is expected to remain conscious less than 10 minutes in 40° water, we can see good reason for staying in the boat or getting out of the water, if capsized, immediately, or sooner.

Another important winter boating consideration is ice. Ice on the boat ramp and in the water can be hazardous. Ice under foot or under your automobile tires can be handled with a bucket of sand. As for the ice on the water, stay out of it. Fifty yards of skim ice can make your wooden boat look as if it has gone through a meat grinder. Fiberglass can be damaged by thin ice also. The remaining major type of construction material—aluminum—is more forgiving. This is not to say that fiberglass will not take a certain amount of ice punishment (because it will) but from my experience aluminum will withstand more.

It is not too difficult to rig a temporary shield around the sides of a small boat and a little more effort will permit you to reduce ice damage to larger boats. If you know that you will be working under ice conditions, I suggest that you try your hand at tinsmithing.

In the winter you will have less daylight. It's a small point, but plan your trips accordingly. Getting back at 5:30 p.m. in the summer may be fine, but during the winter you may find yourself groping back with a searchlight at this same hour.

Don't overlook the wind shift that comes with the approach of winter. The calm side of the lake or sound in the summer will no doubt be the choppy side in the winter. You may wish to use a different access point or plan your trip differently because of this.

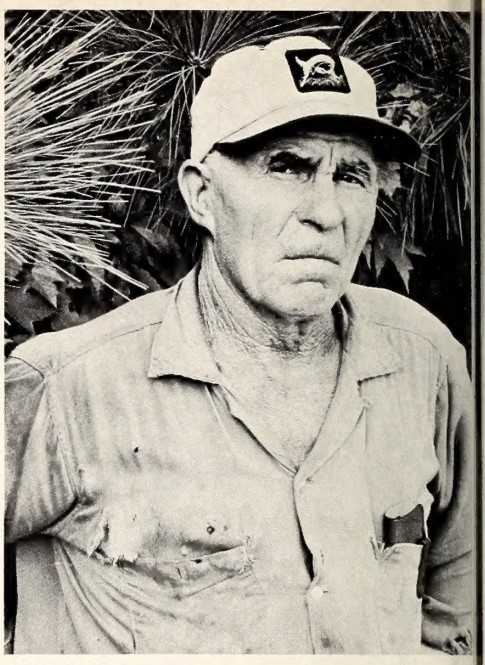
Just cruising, fishing or hunting, there are a few things to consider when boating in the winter months. There may be times when you think only of a fireplace and a favorite TV program. However, with proper planning you can be a full time boater and enjoy it.

Time for boating? Probably not, but a mid-winter thaw may free this pond in short order. In the meantime, get ready.

Joel Arrington

Bertie County QUAIL HUNTER

by George E. Burdick



Joel Arrington

SIXTY-six years-old, Dwight T. Baker has been living in Bertie County all his life. What's more, he's been hunting quail ever since he could lift a gun and isn't about to quit.

Dwight knows the habits of quail from many years of year-round observation. Each covey is something special and each hunting trip affords a new experience and another hunting yarn.

Few people can relate hunting experiences the way Dwight does. When he stops by for a visit, people turn off their television, put aside whatever they are doing and wait for him to get wound-up. He makes you appreciate the old-fashioned art of conversation and nobody tries to interrupt when his tales are being told. It's more enjoyable to just sit back and listen.

"I want you to know birds are smart," began Dwight one night recently. "The last time I was over in a swamp near the Cashie River a covey flew up and sailed off down in the bottom. I followed in the direction they flew and stomped around for thirty minutes trying to flush them when all of a sudden I got this feeling I was being watched—well, I looked up and every dadblamed one of them birds was setting on tree limbs up above me. They had watched me stomp around and I'd swear all of'em started laughing when I looked up. I didn't have a gun to shoot and they didn't fly because they knew I couldn't hurt them. As I walked back up on the high ground, they talked to one another and just laughed themselves silly.

"Yes sir, quail are smart. They set with their tails pointing in and eyes pointing out so that there are always two or three pairs of eyes watching you no matter from which direction you come.

"You can't surprise'em; and on a covey rise they put most people in such a state of shock that the birds are out of range before they can shoot."

"AW you're just making excuses because you can't hit them!" quips Webster Daniels, a Wildlife Resources Commission Farm Game Worker and Dwight's most frequent hunting companion.

"You make me miss," returns Dwight who is use to this kind of chatter from his friend Webster. "I was hunting last fall and had seven birds out of seven shots when ole Webster comes up and we start hunting together. Do you know I never did knock down my eighth bird?"

"I believe somebody gave you the first seven," laughed Webster.

Ignoring this remark, Dwight continued. "The real enemies of quail are cats and dogs. I've got two cats on one of my farms, but my other two farms, which do not have cats, have lots more quail. I've already seen one of those cats with a young quail this year, but I didn't have my gun with me or there'd be only one cat now.

"Tell about that cat that was so afraid of you," interrupts Webster, who has heard all of Dwight's tales but could sit up all night and sometimes does—listening to them again.

"Let me tell you about the best shooting I've ever done first," replies Dwight who has just gotten around to answering his friend's suggestion that he can't shoot. "I went hunting once and killed eight birds while firing my gun only three times.

"You shot them on the ground then," suggested another experienced quail hunter.

"Have you ever seen me hit a quail on the ground?" returns Dwight.

"I haven't ever seen you hit one anywhere," answers his friend who knows full well that the more he can provoke Dwight, the better his tales will be. "In fact, every time I go hunting with you, you're claiming my birds."

MR. Baker takes such remarks in stride. He knows his friends are riding him because they enjoy his faked reactions. He also knows that hunting is more fun when there are companions along who laugh at your misses and claim your birds when hit. Of course, you have to be a real close friend to get away with such jokes.

"It's known as reverse psychology," explained Dwight to me one day. "It's sorta like a boy who can bloody his brother's nose, but will beat the tar outa anyone else who tries it."

"How about that fast cat?" asked Webster.

"Oh yeah," begins Dwight again. "I had a cat so scared of me once that every time it saw me it would scat out by the creek and climb a great tall ole sycamore tree." I had shot it with No. 8 birdshot once for ketching a young quail and after that it stayed slap out of my way. Just to show you how fast this cat really was," he said, "I went out last winter and sawed down the sycamore tree. Then I went looking for that cat and found him down by the hog lot. Well sir, that ole cat takes off in her usual manner making a blue streak for the sycamore tree. I start loping off behind it to see what's going to happen, and when I get down to the creek, there's that cat forty feet up in midair jest clawing for the top of that sycamore which ain't there no more. That was one fast cat!"

"Whatever happened to him," questioned Webster.

"It jest climbed out of sight and I never did see it any more.

"But let me tell you about quail," says Dwight who loves to spin yarns about all living things but never strays for long from his favorite subject — the bobwhite quail.

"Do you know where quail like to nest the most of this county? Right alongside the roads," he replied. " I went to work for the Highway Department in 1923 and I've mowed road shoulders all that time and that's where the quail nests are. I've even found nests within 18 inches of the pavement where grass is only two inches high.

"Whenever my mower would flush a quail, I'd raise the blades so as not to break any of the eggs. Sometimes, I'd have to go back and re-cover the eggs with vegetation. The hen quail would come back then and hatch those eggs. To my knowledge, I never broke up but two nests; and I kept up with dozens of quail nests on road shoulders."

Mr. Baker is now retired from the Highway Department after 40 years of service.

"Tell us about the best bird dog you've ever owned, Dwight", prompted Webster Daniels.

"Well, I've owned some crackerjack hunting dogs but the best would have to be old Shing.

"SHING was an English Setter that really made hunting easy for me—I remember her pointing a covey in a thicket one time. Shing went outa sight in the brush after those quail and I followed along as best I could. All of a sudden a quail flies up in front of me and I downs it. About 10 seconds later another one flies up and I downs it—these birds kept coming up every 10 seconds until I killed 13 birds. (This was in 1921 when there was no bag limit.)

"After the last bird fell, I tore into the thicket to find Shing and that dog was looking under a stump to see if there were any more quail left.

"Shing had run all 13 birds under a stump and was holding her paw over the hole while one bird at a time would flush out for me to shoot. She was a good dog.

"I feed my quail," he said as we urged him on. "I've got a total of over 250 acres in Bertie County and I've planted all the annual mixture the Wildlife Commission would give me. That's the best place to find quail —in my wildlife plantings. I've flushed four coveys outa the same narrow-strip which isn't over 25 yards wide and 100 yards long."

Dwight Baker was not spinning a yarn about his farms and the quail he has seen on them. The author has visited his farms and seen his wildlife plantings. Besides having corn, soybeans and peanuts for principal crops, and planting annual mixtures from the Wildlife Resources Commission every year, Mr. Baker buys seeds and plants it on every ditch bank, odd corner and field border on his farm. "It's the way to have birds," he contends.

He also experiments with various plants on his own, including a reseeding cowpea which looks promising. Dwight picked up a few seeds in Harnett County several years ago. From that handful of seeds carried home in a hunting coat pocket, he now has enough to plant every year.

There are no "posted signs" on Dwight Baker's property. He doesn't object to others hunting as long as they conduct themselves like gentlemen and don't shoot his hogs. "Shoot all the stray cats and dogs you like," says Dwight, "and kill your limit of quail if you can. You've got to be willing to go into cutover timber to get more than one shot at some coveys. My birds will never be overshot, especially by soft city-type hunters;—it's a rugged sport."

Dwight Baker is a rugged person with a special home-spun quality which makes you wonder if he doesn't know what he's talking about when he asks, "How can life be any better anyplace else?"

"What other people call progress is what I sometimes call the wrong way to live. If you listen to all the propaganda, politics, and problems in the rest of the world, you'll stay unhappy. If you watch wildlife in Bertie County, you'll be happy.

You don't stay around 66 years without developing a philisophy on life. Mr. Baker's is simple— "Conserve, manage and enjoy the natural resources around you— especially quail hunting."

Where did Dwight Baker get this limit of quail? "Somewhere in Hertford County", would be his most likely reply. But get them he does, most of the time.

DEPARTMENT OF LETTERS TO THE EDITORS, FIELD NOTES, AND ITEMS OF INTEREST

Conducted By Rod Amundson

With the hunting seasons over except for varmint shooting, most Tar Heel hunters could look back on a fairly successful season. They might, however, have found hunting access to private lands a little more difficult than before, and with reason.

While most hunters conduct themselves as sportsmen and gentlemen, there are still a few whose sins many must suffer for. This letter from D. D. Peeler of Lexington, rather forcefully presents a land owner's point of view, plus some ideas on how to control trespassing. *Wildlife* hopes that most land owners will keep their land open to hunting, but by the same token admonishes hunters that misconduct on private lands while hunting can kill the proverbial goose:

"In December you ran a letter from a lady at Morganton who wanted to keep trespassers off her land. It isn't possible to keep them off entirely, but I have found some actions which help.

"My problem is one of safety, rather than protecting game. I have 10 acres of woodland with good hunting, but there are five houses within shotgun range, and approximately 50 within rifle shot. In three years, I was peppered three times with birdshot, had two near misses from rifle balls, and somebody shot a hole in the stable roof while I was milking our cow. This is irritating.

"In such matters local law enforcement officers and game protectors are worse than useless. There are reasons for this, but they are beyond the scope of this letter. It is up to the landowner to enforce his no-trespassing decision.

"The following procedures have worked fairly well for me:

1. Keep the land posted at close intervals along the property lines. If the signs are torn down, put them too high to reach next time.

2. Challenge all trespassers. This is always unpleasant and sometimes dangerous, but it is essential. Care must be taken to maintain control of subjects, particularly if they have been drinking. Several landowners and at least one game protector have been killed when they lost control of a subject.

3. Examine the hunting licenses or identification papers of all trespassers. Record their names, addresses and descriptions for future reference. I have started making photographs of flagrant violators for possible use in court.

4. Explain that the land is posted, why it is posted, and where the boundaries are. If the trespasser seems a decent sort I usually turn him loose with the understanding that a second offence will be prosecuted.

5. Having first obtained the advice of an attorney, prosecute the most flagrant violators. This is inconvenient and expensive, but it is better than being shot.

"None of these procedures make you any friends, but who needs friends who willfully trespass on his premises and destroy his property? Vandalism and petty thievery are to be expected in retaliation, and the landowner must be prepared to deal firmly with it.

"A relatively few boneheads are closing the hunting areas of North Carolina to all hunters. There is much to be done in educating people to the need for courtesy and safety in hunting. I am proud that *Wildlife in North Carolina* has done so much in this vein, but it is not nearly enough to keep the woods open. Unless the shooting fraternity can police itself, the day of hunting on private lands is gone." D. D. Peeler, LEXINGTON

Another One

From the Hickory Daily Record 11-23-64 "$25 reward for information concerning the shooting of my cat Saturday morning. Also, there will be no hunting on my property from this day on." W. W. BROOKS, 3908 10th Avenue, Hickory

Another example of the part time hunter suffering from action of a full time idiot!

Can't say I would act a bit differently than Mr. Brooks. Surely hate to see the land closing in though. E. D. NELSON, HICKORY

Carp Catchers

DEAR SIRS: While I can't help Mrs. J. H. Gibson find a preservative for carp dough bait, here are a series of carp baits that work, but are no work to make.

The basic technique for making good dough bait is the "wheatie" bait method. From this bait you can use your imagination and add whatever comes to your fancy.

You take a handful of wheaties and place them in the center of a handerchief sized piece of cloth. You then fold the ends up making a bag. Now dunk the whole bag into water and hold it under until the wheaties no longer crunch. Now lift it out of the water and squeeze only the excess water out. Remove the dough from the cloth and place it in a plastic bag or a jar and go fishing. Refrigerate to keep.

Rather than wheaties I like the following better: I piece of white bread, cornflakes and/or cornflake crumbs, water flavored with honey.

Most of my friends no longer use even these simple dough baits, but have graduated to a sure carp killer: canned whole corn.

Instead of fishing with a pea-sized piece of dough bait, thread about seven kernels of corn onto your hook. Chum the water a *little* with the corn and if there are carp around, you will catch them. R. H. RUBENS, WILMETTE, ILL.

DEAR SIRS: I have two good recipes for dough ball for carp. They are as follows:

Formula No. 1

1 cup flour
1 cup yellow cormeal
½ cup Parmesan cheese, grated
1 teaspoon sugar

Mix with cold water to form thick dough. Roll into small grape-size balls

and drop into pan of boiling water. Add sliced onion and boil until balls float. Remove balls and cool. Bait will stay fresh for several days, but keep covered with moist cloth.

Formula No. 2

½ cup flour
½ cup cornmeal
2 teaspoons cheese, grated
2 teaspoons ground beef

Mix together and boil for 20 minutes. Then shape into balls the size of lima beans. Add a drop of anise to each ball after impaling bait on hook. This bait will last a week or so without refrigeration.

I have a suggestion that you may think worthwhile. My mother, and several other teachers, like to use the pictures on the front cover. There are also always nice pictures on the back of the front cover. Would it be possible to use this picture on the back cover so that they both may be used to good advantage?

PHILIP A. SHROATS (age 16) FAYETTEVILLE

We'll give some thought to this. Meanwhile, use *two* copies if they are available. —Ed.

Lose a Knife?

DEAR SIRS: I would appreciate it if you would print this in *Wildlife* magazine: While hunting on the last hunt of Cantrell Creek Wilderness hunt, near Brevard, I found a knife belonging to someone that hunted on the first hunt. They were a party of four from Greensboro, and anyone that will describe the knife and the area where he lost it I will be glad to send it to him. Thank you. CLAY NICHOLS, SPARTA

Deer-a-roo

DEAR SIRS: I would appreciate any information that you could send me on the length and height that a deer can jump.

Your promptnes in replying will be deeply appreciated. JOHHNY WOOD, BAILEY

It would depend on how scared he was, but a deer can jump at least seven feet high and about twenty feet in distance, but not likely both in the same leap. —Ed.

Next . . .

DEAR SIRS: In science our class made up questions about anything that we were interested in. My question was why are snakes poisonous? My seventh grade teacher asked me to write for information concerning this. Any help you could give me would be greatly appreciated. RAY RANES, HENDERSON

Some snakes are poisonous because nature intended them to be that way, and it is impossible to answer the question as to why. —Ed.

DEAR SIRS: Could you answer this question, why do cats land on their feet, even when you turn them upside down? I have an essay to make, and I can't find it anywhere else, I've written to you once but you didn't answer. MIKE JONES, HENDERSON

The question of why or how cats land on their feet, even when you turn them upside-down does not come under the jurisdiction of wildlife conservation. Cats are very quick and agile, and we could suppose that they land on their feet because they do not want to hurt their backs. —Ed.

For Rent — For a Song

Dear Sir:

In one of your issues last spring I noticed where one of your readers had built a bird house out of plastic jugs. I became interested and decided to build one similar to the one shown myself.

Am enclosing herewith two pictures—one taken when I completed my bird house on the ground and the other one showing it in the air. I used two gallon Clorox jug on the bottom and the other three shelfs contains 12 ½ gallon jugs each for a total of 38 jugs.

Sincerely,
TROY STARLING, HOPE MILL

Sticky Situation

DEAR SIRS: On page 17 of the June 1958 issue of *Wildlife* you describe the size and other specifications of a squirrel box. I have made three of these and like them but in the summer, honey bees take them over. Is there any satisfactory way I can keep the bees out? EDWARD S. KING, M.D., SHELBY.

Dear Dr. King:

We do not know of any really satisfactory way of keeping bees from invading squirrel nest boxes. Bees, like squirrels, look for cavities resembling hollow trees, and squirrel boxes offer them a natural abode.

You can use insecticides to kill or repel bee swarms invading squirrel boxes. Better than this, perhaps, would be to contact a local apiarist who could very likely entice the bees into a commercial-type beehive.

You might put up more squirrel boxes with the thought that bees would take some of them, squirrels the others. Then at the appropriate time, there would be plenty of Brunswick stew with hot biscuits and wild honey on the side.

Rod Amundson
Chief, Division of Education

Old Stuff

DEAR SIRS: I find that the *Wildlife* magazine answers many questions of other states, and not just North Carolina. I am so happy to have some of my friends in these states see for themselves, what a magazine of this kind can do, in regard to conservation, fishing, hunting, boating, etc.; in so small a space and in such a varied and interesting manner as you seem to be able to do.

It is too bad one cannot get back issues. (As it is I have to type old articles, for some of my friends, as I do not want to part with these issues.) Selfish? I would say "yes." Yet a bird in the hand is worth two in the bush. That is why I like to keep my issues.

Keep the good work going, as there is no finer magazine going than your *Wildlife in North Carolina* at your price or any price. ALVIN F. STONE, SYRACUSE 10, N. Y.

Flight Plan

DEAR SIRS: I am going to tell you something which I doubt many of you have seen; even though I have told many people, only a few believed me. I saw a hawk in gliding position, perfectly still in the air. Can you help me to explain how it is possible for a hawk to do this? RONALD HILL, HICKORY

It does sound like the hawk was defying the law of gravity, but many such birds are equipped to take advantage of air currents and soar great distances with only an occasional flap of the wings. If the air curents are just right, the big birds can remain all but motionless . . . Ed.

Joel Arrington

Reuben M. Crumpton receives the N. C. Protector of the Year Award from Wildlife Commission Director Clyde Patton. This citation for outstanding service was awarded by the Law Enforcement Section of the Southeastern Association of Game and Fish Commissioners at its annual meeting in Florida last fall.

Boat Problem

DEAR SIRS: After reading the August issue of *Wildlife* "Crackshots and Backlashes," I am in full accord with Mr. Allen Earnhardt of Spencer, N. C.

I think he and every other sportsman is fully justified in wanting something done about the larger and faster boats on our lakes anywhere in North Carolina.

I am sure he has no thought of taking anything away from those with pleasure craft boating or water skiing, and at the same time I am sure that those with larger and faster boats who have good sportsmanship at heart don't want to take anything away from the fisherman.

I can't see where it would cost so much to have just a simple "law" with rules and regulations of good common sense that would apply to both. Then keep your faster boats in open water and not in necks and coves where you find most fishermen.

I have had people water skiing to come within 15 feet of my boat in coves where I was fishing. An act of this kind is uncalled for by any one.

I have great admiration for the Wildlife Commission for the many things they have done. We now have something to fish for, and I am sure it would not take the wisdom of Solomon to do something about it. We could have rules and regulations for all boats entering necks and coves as well as coming in to dock; or do so at an idle speed.

We have a wonderful state, a good Wildlife Commission, beautiful lakes, and good fishing. Let's all be good sportsmen and give the other fellow a break. DOC COLEY, MT. PLEASANT

LAST FRONTIER

• **continued from page 9**

Sericea is utilized extensively as cover by small game. Annual lespedeza is also distributed. It provides both food and cover, but it is not a good competitor and reseeds poorly if shaded by other plants.

Procuring these materials is a simple matter. Many other agencies cooperate with the Commission. Simply contact the nearest farm agent, wildlife protector, agriculture teacher, Soil Conservation Service representative, wildlife biologist, or write to: Division of Game, Box 2919, Raleigh, North Carolina. Any of these sources can help you get the materials. Instructions are on the bags of seeds or plants; each unit is designed to plant about ⅛ acre. Delivery will be made to you just prior to time for planting.

Farm lands are the primary source of hunting recreation for the great majority of Tarheel hunters. Development of farm habitat is about the only opportunity for many of us to engage in wildlife management. It is the last frontier for developing more hunting. The habitat materials offer the simplest and the most efficient and economical route to developing the great potential of this resource.

EFFECTS OF DRAINAGE

• **continued from page 15**

managed properly. We do not yet know everything that is needed for optimum production of these species, but with our present state of knowledge, *we cannot endorse drainage of hardwood swamps,* and we know of no one who has the facts in hand to form a basis for recommending the practice. For the present we side with those who hold the view that at least for tupelo, swamp blackgum, green ash and cypress, a saturated habitat comes closer to the right environment than the unrestricted water removal that apparently takes place where drainage is applied with unrestrained vigor.

There is plenty of operational experience and engineering know-how on designing ditch systems and draining wetlands. We would suggest that this know-how be applied in all drainage projects to modify procedures so as to preclude or minimize dam-

A stand of hardwoods along the Roanoke River is inspected by a touring group sponsored by N. C. State College.

Luther Partin

ages to tupelo-cypress swamps. Rates of flow can be manipulated by wing control structures in the ditches. Variations in pattern and spacing of ditches, use of shallower ditches, and use of peripheral ditches may offer some possibilities in preserving these wetland forest conditions.

There is, however, virtually nothing available on how drainage modifies soil and hydrology for timber production and other purposes. Systematic observations on cause-and-effect relationships are few and far between. It is imperative, therefore, that some early answers be sought to guide new programs and help wetland managers avoid costly enterprises which could be highly damaging to the Southeast's water resources, timber sites, and game habitat.

DOG: MAN'S BEST FRIEND
• continued from page 21

time available due to mechanized automation in our factories and with prospects of even more leisure time to be available in the future, our wildlife is, and will continue to be, in great demand as a source of outdoor recreation. It is time we took a long and serious look at the problems confronting this valuable resource and started taking corrective measures to insure an adequate supply of wildlife to meet the increasing demand. Control of free-ranging dogs is a step in the right direction.

IF you consider yourself a conscientious sportsman and if you own dogs, ask yourself these questions. Do you know where your dogs are during the wildlife breeding season? Do you allow your dogs to freely roam the countryside; especially when the movements of wild creatures are seriously impeded by high water or heavy snow? Do you often neglect to feed and otherwise mistreat your dog? Do you allow your dogs to run with stray mongrels? Dogs that are carefully controlled and well disciplined are not particularly dangerous to wild birds and mammals. Too much freedom and too little discipline, on the other hand, permits a dog to form bad habits and associate with packs of mongrels that are already wreaking havoc with wildlife.

It is not the purpose of this article to condone nor to condemn the dog, but rather to point out the seriousness of the threat to our wildlife when dogs are allowed to go uncontrolled, and to offer possible solutions to the problem. The uncontrolled dog problem is *our* responsibility. We refused to destroy the puppy that was no longer wanted. Instead we turned it loose on some country road and left it to its own resources. We often neglect to pen our dogs or use discipline when and where it is needed. Yes, the responsibility is ours and the wildlife losses are our losses as well. We cannot and must not turn our backs on the uncontrolled dog problem. If our wildlife resources are to be rescued from the dog menace, we must all unite and take appropriate action.

All right, you say, so we recognize the problem. What can we do about it? The intelligent approach to the uncontrolled dog problem is through education. To begin, our young people should be taught the responsibilities of owning and properly caring for a dog. We should not forget to point out the consequences resulting from neglect when that "cute" puppy grows up and may no longer be wanted. Anyone not wishing to properly care for a dog certainly has no business owning one and any dog worth having is certainly worth caring for properly.

Second, unite with other sportsmen in a joint effort to account for all dogs in the field regardless of season. We need not continue to allow the needless destruction of our game birds and mammals by free-ranging dogs. Third, unite with other hunters and with sportsmen's clubs and other groups to see that it becomes illegal for dogs to hunt by themselves. We, in North Carolina, lack suitable laws regarding self-hunting, uncontrolled dogs. But as tax-paying citizens we can remedy the situation by seeing that adequate laws are formulated and, once in effect, enforced through cooperation between citizens and law enforcement officials.

This important need for legislative action cannot be overemphasized and it brings us back to the key word encompassing the problem—education. Before laws can be formulated the people must be aware of a need for them. And this is where a public educated to the destruction of wild creatures brought about by uncontrolled dogs can take corrective action to prevent further losses to a rich and valuable resource.

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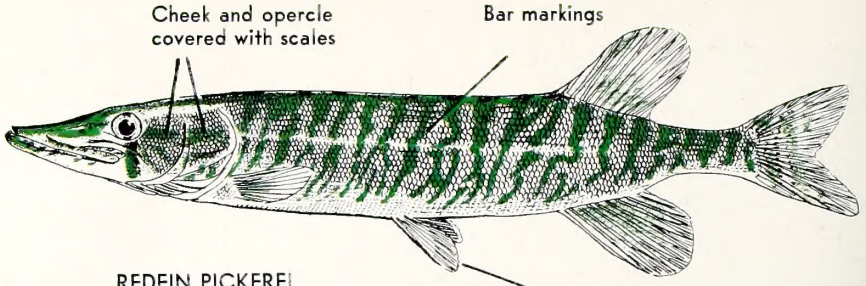
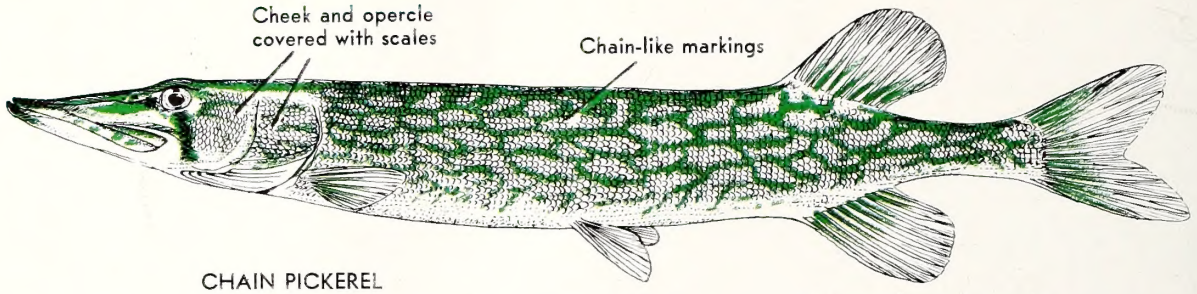


REDFIN PICKEREL

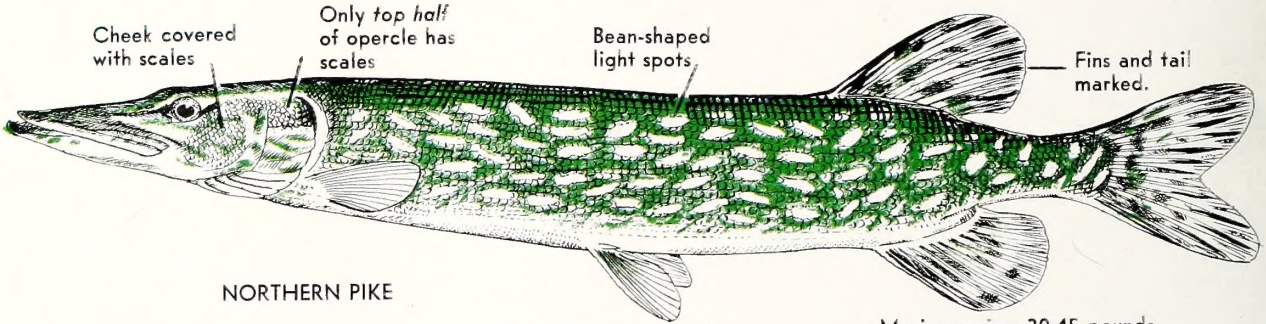
Maximum size: 15 inches
Average size: 7-10 inches



CHAIN PICKEREL

Young may be marked very much like adult redfin.

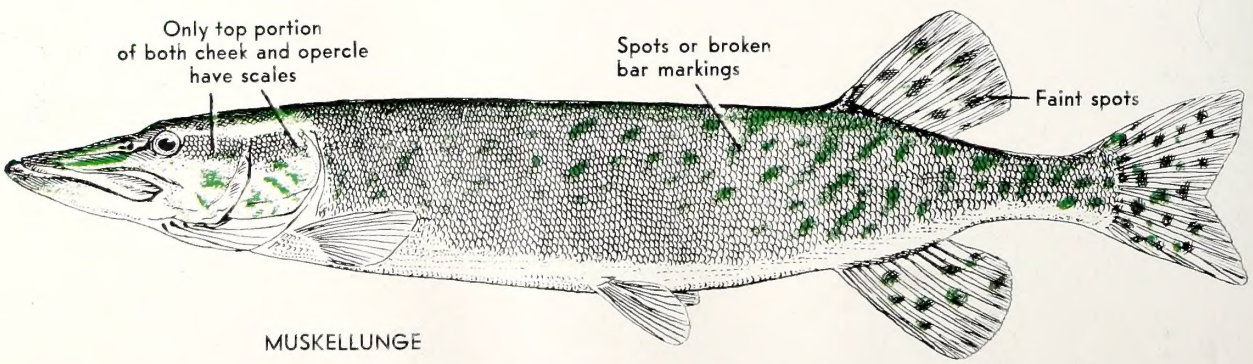
Maximum size: 7-9 pounds
Average size: 1½-3½ pounds



NORTHERN PIKE

Young may be marked much like young pickerel.

Maximum size: 30-45 pounds
Average size: 5-10 pounds



MUSKELLUNGE

Young have more [illegible] markings

Maximum size: 50-65 pounds
[illegible] 8-15 pounds

D. RAVER

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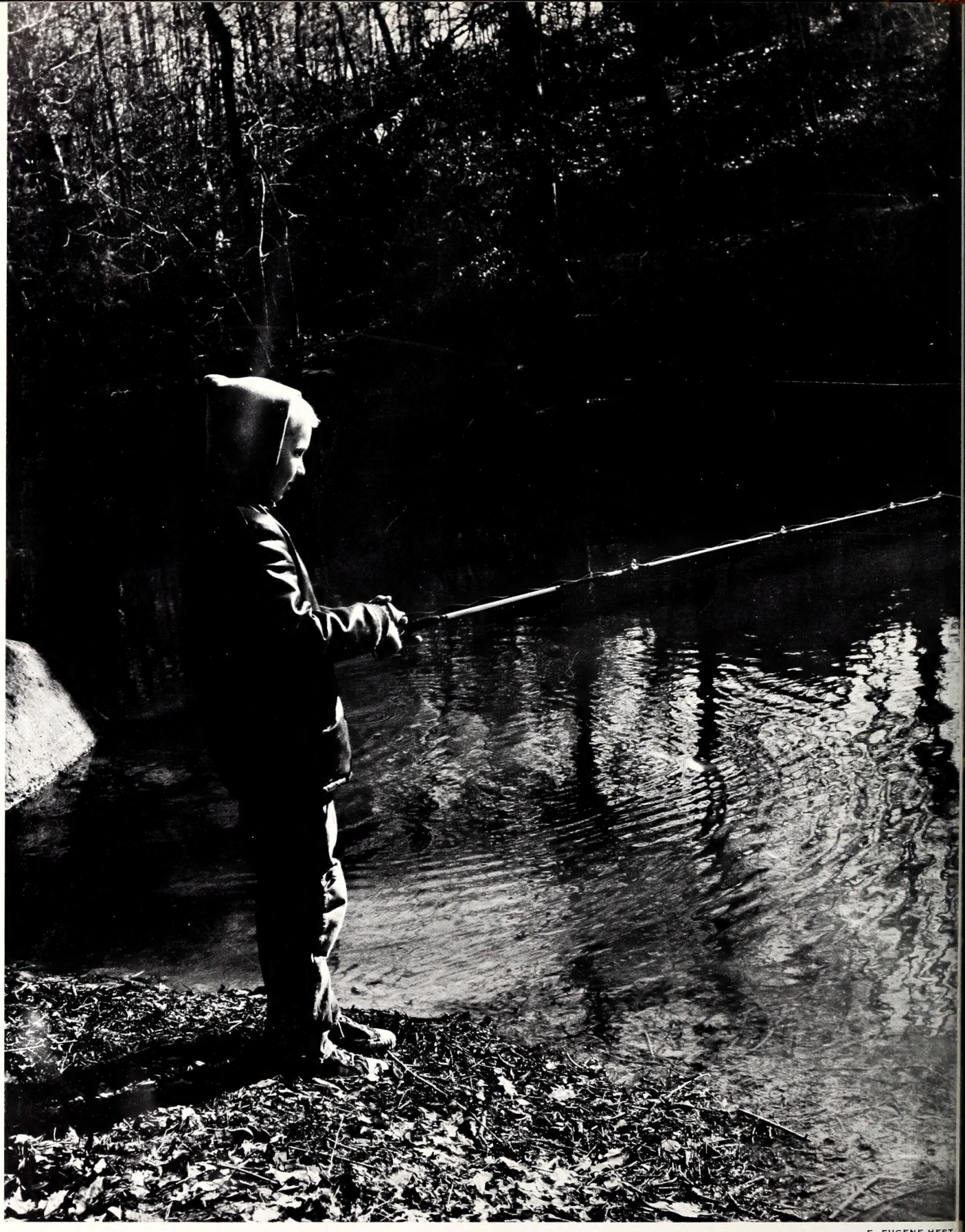
Wildlife IN NORTH CAROLINA

MARCH, 1965



F. EUGENE HEST

BRRR...

Some of us just can't wait! Even though the water is barel above the freezing mark, many anglers are out catching fis At least the calendar says that spring is almost here, an maybe the weather will soon concede too. We're gettin anxious; how about you?

STATE OF NORTH CAROLINA

DAN K. MOORE
GOVERNOR

NORTH CAROLINA
WILDLIFE RESOURCES COMMISSION

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WILDLIFE IN NORTH CAROLINA recognizes the need for close cooperation between State and Federal conservation agencies and the people who hunt and fish—to bring about a restoration of our renewable resources. The Editor gratefully receives for publication news items, articles, and photographs dealing with the North Carolina out-of-doors, but reserves the right to reject materials submitted. Full credit is given for all materials published.

* * *

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MARCH, 1965 VOL. XXIX, NO. 3

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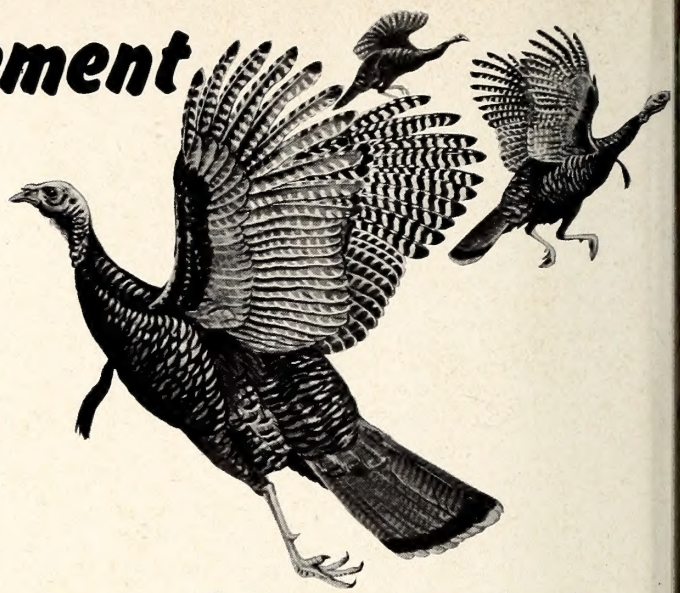
LUTHER PARTIN _ _ WRITER-PHOTOGRAPHER
JOHN PARKER _ _ _ _ _ OUTDOOR SAFETY

This half-grown raccoon is surveying the chilly March evening hopeful of finding a quick meal. Early spring means a time of searching for food for most wildlife. Fall's bounty has been eaten and spring's supply is still weeks away. Our masked friend here will settle for a few kernels of dried corn, a still-dormant crayfish, or a handout from the nearest garbage can. His stored fat will sustain him until better times. Painting by Duane Raver.

Some Problems in Wild Turkey Management in North Carolina Part I

by Sam Gooden
Wildlife Biologist



This is part 1 in a series of articles outlining the plight of the wild turkey in North Carolina and some of the management procedures underway or planned to help this game bird. The series will review the past, discuss the present, and speculate on the future.

THE wild turkey is our most highly prized game bird. In spite of the high esteem accorded it by sportsmen, conservationists, nature lovers, and others, the future of the wild turkey in North Carolina is uncertain. We are truly at a crossroads in the management of this prized hunting trophy. One road leads to continuing populations of turkeys for hunting enjoyment in many parts of North Carolina. The other road leads to the elimination of huntable populations except on a few large public management areas and large private areas and these at great expense. In this article we will discuss the major problems affecting the future of the wild turkey in North Carolina.

We must understand the requirements of wild turkeys before we can understand the problems involved in their management. Good turkey range must meet the following requirements:

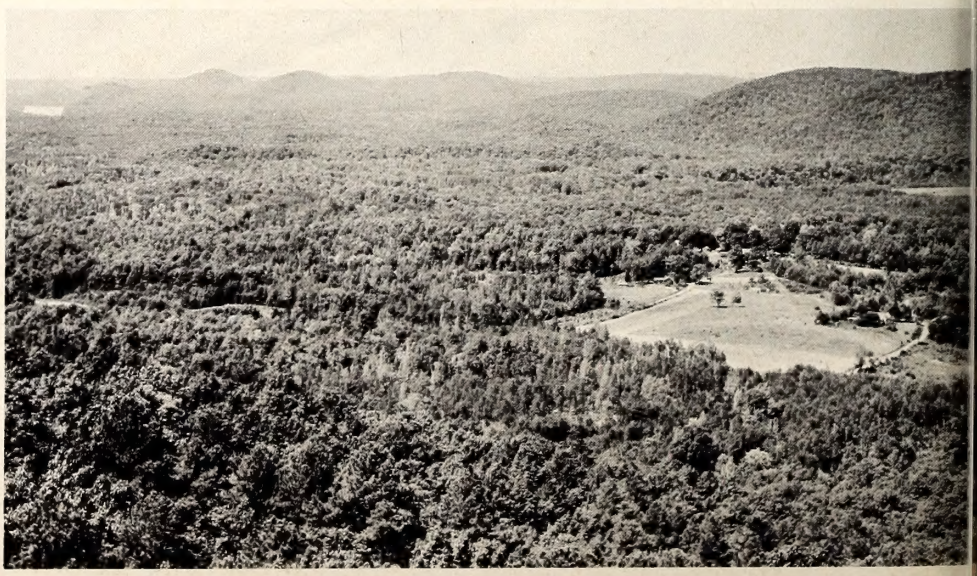
1. Large sized areas
2. Suitable habitat:
   (a) Readily accessible drinking water
   (b) Largely in timber — much of which is mast-producing hardwoods
   (c) Clearings containing desirable vegetation
3. A minimum of disturbances.

The annual home range of a covey of quail often does not exceed 40 acres. The average annual home range of the white-tailed deer is about 500 to 1,000 acres. But the annual home range of a flock of turkeys, except in the most ideal habitat, will usually be at least 3,000 acres, and it often will be more than twice this size. The size of an area necessary for management of wild turkeys depends on the suitability of the habitat and the use of the area. The less suitable the habitat, the larger the area required. An area of 5,000 acres in good habitat may be sufficient to provide turkey hunting for a small hunting preserve or club if it is surrounded by good habitat in which turkeys are protected. For managed public hunting, areas 12,000 to 18,000 acres are the minimum and over 50,000 acres are desirable.

It is apparent from these figures that the size of areas needed for wild turkey management is a primary problem. Many of our state management areas are inadequate in size for wild turkeys without the influence of the surrounding area. Single private land ownerships of sufficient size are uncommon. This means that most of our wild turkey flocks on private land (and most are on private land) are dependent on several adjoining land ownerships for suitable habitat and protection. Therefore, turkey management requires a lot of cooperation and "community effort."

SUITABLE habitat is the second requirement of good turkey

Vast areas of woodlands interspersed with grasslands seem best for good turkey range. One problem: finding such areas.



range. Good turkey habitat must contain well-distributed, freely accessible drinking water. Adequate drinking water in the form of springs, creeks, rivers, ponds, and lakes, is present in most of North Carolina's turkey range. Therefore, it should seldom be a problem in management of wild turkeys in this state.

Fifty to ninety per cent of good turkey habitat should be in timber with a variety of interspersed timber types and with much of the timber mature mast-producing hardwoods. Wild turkeys are dependent largely on mast for food in winter. Statewide, acorns and dogwood berries probably are the most important mast. Beech nuts, ash mast, grapes, and berries of sumac, greenbriers, black gum, black haws, red haws, hollies, and many others are eaten in smaller quantities. Forests with stands of mature hardwoods are necessary for production of mast for wild turkeys. A shortage of mast may be partially alleviated by plantings of certain grains, legumes, and grasses. However, plantings are expensive and may be ineffective where there are high populations of deer. Deer may eat up the plantings before turkeys get any benefit.

For protection from enemies wild turkeys depend on escape by running or flying. This is possible through keen sight and hearing and continuous alertness. Stands of mature timber with an open understory are favorable for this type of protection, whereas thick brush and tree reproduction are a hindrance. The best deer habitat (abundant brush, sprouts, and tree reproduction for browse) and the best turkey habitat (open understory below mature hardwood timber) are quite different.

At least ten per cent of good turkey habitat should be in well-distributed clearings supporting good stands of grasses, legumes, and fruit and seed producing vines and shrubs. Clearings (small fields or other cleared areas) well distributed throughout the forest are necessary for production of food in spring, summer, and early fall. They not only produce grass, weed, and legume seeds, green vegetation, and berries and other fruits, but large quantities of insects. The high protein diet obtained from insects is important in the development of the turkey poults. The importance of clearings is emphasized by the fact that turkey hens usually nest in or near clearings and frequently take their poults into clearings to feed. Flocks of turkeys using winter range containing no clearings usually make a complete change of range in spring to an area where clearings are abundant. Clearings also can be important in furnishing green vegetation for food in winter.

IF these are the habitat requirements of wild turkeys, then what are the problems of maintaining suitable habitat? First, large acreages of existing or potential turkey habitat are being destroyed or damaged each year. How? More and more timberland is being cleared and put into crops or pasture each year. Other timberland is being ditched to give better drainage to adjacent cropland. This often results in damage to or killing of certain important timber species. The most common example is the drainage of tupelo and cypress swamps (see "Bottomland and Swamps +Wildlife=$$$," June 1964, *Wildlife*). These two types of loss are particularly prevalent in the Coastal Plain. Most of the dams already constructed or planned on the rivers of the Piedmont have or will flood some of our best turkey woods. Excellent examples are the dams planned on the Haw and Neuse Rivers. Expansion of urban, suburban, and industrial areas are slowly but steadily eating up more of our timberland, and highways continue to fragmentize our fast diminishing wilderness.

A second way that suitable turkey habitat is being destroyed or damaged is by changes in the timber composition. Pine has been the most profitable timber in the past two decades on many timber sites. The hardwoods have been cut or killed, creating vast acreages of almost pure stands of pine. Many abandoned fields scattered through the forests which formerly served as clearings for wild turkeys and other game have grown up into brush and trees or have been planted to pine trees (see "Pine Production and Wildlife," November 1964, *Wildlife*).

All of these changes are being brought about by increasing human populations and changing civilization. This is "progress." Nevertheless the effect on turkey and other game populations must be reckoned with and, wherever possible, minimized.

The Wildlife Resources Commission works with state and federal agencies which are sponsor-

The hen turkey usually deserts her nest long before enemies get this close. It is doubtful that she will try to re-nest.

ing drainage and flood control projects. Commission biologists evaluate the effect these projects will have on the game and fish resources and make recommendations to alleviate damage and, whenever possible, to improve the habitat. The Commission also works with private companies and individuals to alleviate damage to game habitat caused by changes in land use and to improve the habitat. Good examples are the Commission's program of distributing wildlife food and cover planting materials and the experimental plantings on power line rights-of-way (see "Cooperation: A Must in Wildlife Conservation," December 1964, *Wildlife*). Technical assistance is available to private clubs and landowners. Forested areas will be inspected and an evaluation of their potential for wild turkeys and recommendations for management will be made.

THE general decrease in suitable turkey habitat in recent years has largely been in the Piedmont and Coastal Plain regions. The future of the wild turkey in these regions is not bright. But what about the Mountain region? About a million acres of National Forest land plus many more millions of acres of private forest land offer a lot of potential habitat for wild turkeys here. Because of the rugged topography, the type of soil and climate, and other factors, most of this forest land will always remain in timber production and much of it will be hardwoods.

We have discussed the first two requirements of good turkey range—large-sized areas and suitable habitat—with their associated problems. The third requirement of good turkey range is a minimum of disturbance. In this discussion we will be referring to turkeys of relatively pure wild stock, raised naturally, and, therefore, possessing qualities of wildness and wariness which make them a challenge to hunt. Turkeys raised in pens and those mixed with domestic turkey blood will usually be "tamer" and affected less by disturbances.

The wild turkey is a very wary, shy, and secretive bird. Such disturbances as timber operations, hunting for turkeys and other game (both legal and illegal), road construction, picnic and camp grounds, domestic animals, fire, and flood all may affect turkey populations. Possibly the greatest effect of disturbances on turkey populations is through losses in nesting. Turkey hens frequently desert the nest at the slightest disturbance. Fire, flood, and domestic animals (livestock and dogs) as well as human activity are very destructive if occurring in turkey range during the nesting season. After destruction or desertion of a nest, the turkey hen usually does not attempt to renest that year.

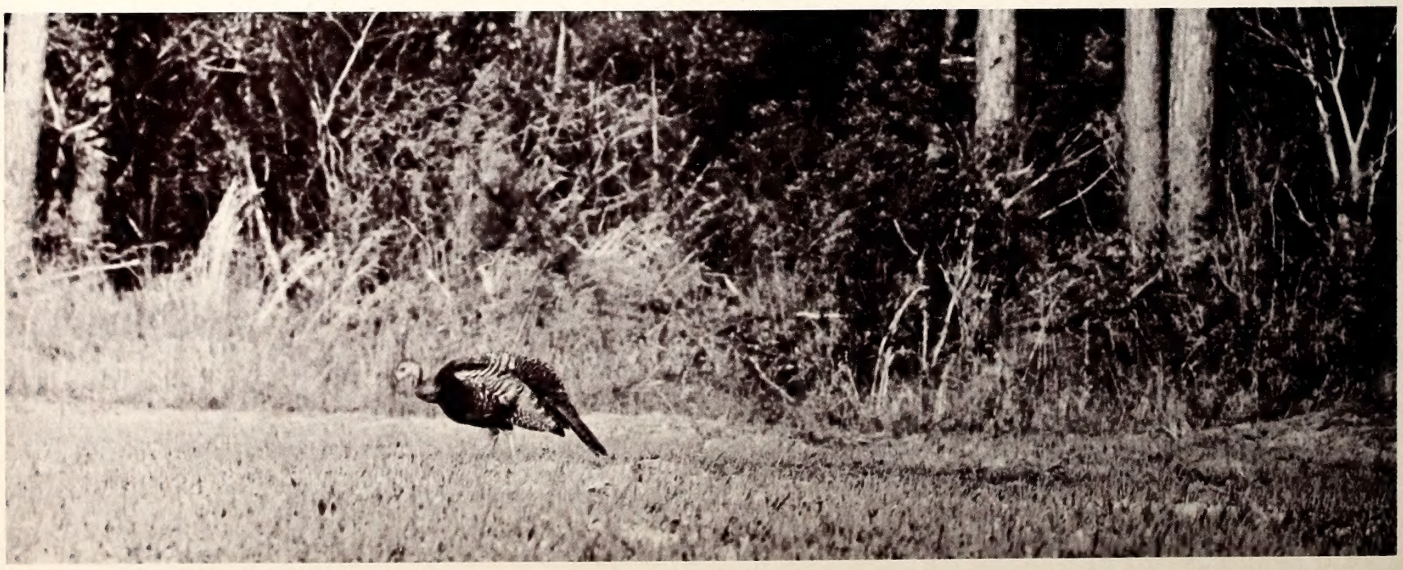
A second way that disturbances affect turkey populations is by forcing them to move from good range—often into areas where they are more vulnerable to enemies (including man). The extent to which disturbances affect turkeys in this way depends on the intensity and duration of the disturbance and on how widespread it is. For example, a small timber cutting operation, even of long duration, will make turkeys desert only a small part of their range. When disturbances of a limited extent cease, turkeys usually will come back into the area. However, a large timber cutting operation covering several thousand acres often will force a flock of turkeys into a completely different range.

Overcoming the problem of disturbances is largely dependent on individual landowners. Where wild turkeys are a consideration, the following steps are recommended:

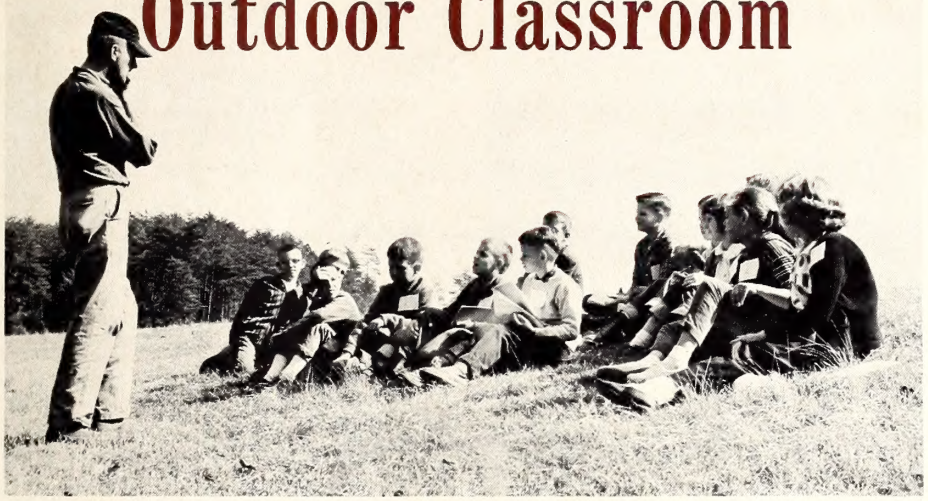
1. Cut timber in small areas at a time.
2. Keep all human activity to a minimum, especially during the nesting season.
3. Keep livestock out of the woods.
4. Keep stray dogs out of the woods and keep all dogs out during the nesting season.
5. Keep uncontrolled fire out of the woods and keep all fire out during the nesting season.

(Next month we will discuss the problems of protection, source of turkeys for stocking, disease, and insecticides as they affect management of wild turkeys in N. C.

LUTHER PARTIN



Outdoor Classroom



by Bodie McDowell

TAKE 160 kids and put them in school from 8 a.m. through 6 p.m.

The idea sounds absurd and is unheard of in this country except for the fifth grades of Madison-Mayodan City Schools. Of couse, this would get old for the children after a while, but they thoroughly enjoy the one day of the year that they meet this schedule.

It's the annual Fifth Grade Science Camp held at Washington Mills Park northwest of Mayodan. It's a two-day session, but the second day ends at 4 p.m. while the first day runs through 6 p.m.

This program is unique also in that it is the only school system in the state that has such a program on a regular basis. With cooperation of the North Carolina Wildlife Resources Commission and the Extension Service at North Carolina State, Greensboro Junior Museum and UNC-G, the session is aimed at letting the students see nature first-hand and to get instruction and lectures from those dealing with the out-of-doors on a day-to-day basis.

The program, starting with an idea of Mrs. Wilma F. Price some six years ago, now is a highlight of the year for the fifth graders, and does much toward stimulating the thirst for knowledge among the youngsters.

"And in addition to the things they study out here, the program has carry-over value in that the children generally write letters to the instructors, telling them what they learned during the camp and how much they enjoyed the program. This helps them in the English class," says Miss Lunette Barber of the Wildlife Resources Commission.

Miss Barber was on hand to teach wildlife, just one of the six subjects studied during the program. Also on the agenda were nature study, insects, water biology, forestry and soil conservation.

Dr. Hollis Rogers of UNC-G and Brad Hawkins, director of Greensboro Junior Museum, were instructors in nature study; Duane Raver, Wildlife Resources Commission and Hugh Fields, Wildlife Specialist with N. C. State's Extension Service taught water biology; Fred Whitfield of the Extension Service taught insects; Extension forester William Stuart lectured on forestry and Dr. H. M. Ellis, Extension Service agricultural engineer, held classes on soil conservation.

Charles H. Scott, Madison Elementary School principal, and Daneel R. leRout, Elliot Duncan Elementary School principal, feel that the program is well worth the time and effort, and both were on hand for parts of the workshop type classes.

Miss Lunette Barber, Wildlife Resources Commission Education Representative, assisted by Miss Linda Atkinson, University of North Carolina-Greensboro, taught wildlife during the two-day Science Camp. The youngsters left the sessions with a better understanding of their natural resources and a deeper respect for the out-of-doors.

JACK DERMID

THE FOURTH DIMENSION EDGE

by S. Thad Cherry
Wildlife Biologist

IN the field of wlidlife management, perhaps the best known, and probably the most significant ecological concept is that of the "edge effect." Indeed, many of the prominent game species may be deemed "products of the edge."

In his studies of ecology, the biologist learns that the ecological "edge" is an ecotone—a transition of two or more diverse communities, such as a forest and a field. It is a junction zone, which may have considerable linear extent, but is more narrow than either of the adjoining communities.[1]

The organisms inhabiting this ecotonal zone, or community, usually far outnumber those found deep within either of the parent communities. For here in this zone of transition we find inhabitants of both parent communities, and often species which would not long exist in the interior of either of those communities. It is this increase in the number of organisms and species in the transition zone which is referred to as the "edge effect." Thus we begin to visualize the importance and validity of the concept of the edge effect and ecotonal communities.

In his studies of ecology, the student becomes well versed in the physical qualities or aspects of the edge effect. In fact, his study of the edge is devoted entirely to the physical dimensions, such as length, width, and depth, with no regard to the all important dimension of time. Time has its place in the concepts of the edge, just as much as do the tangible, physical qualities. In effect, it might even be shown that time has its own edge effect —"THE FOURTH DIMENSION EDGE."

THE "fourth dimension edge" might be defined as that period of time involved in the transition between two diverse periods of time, or as the blend of two diverse periods of time, as, for example, the blending of day and night (dawn or dusk), or the blending of the climatic seasons (fall or spring).

In order that we might attempt to prove the validity of this "fourth dimension edge", let us explore some of its concepts and its relation to the well-known "physical edge." As was previously stated, like its counterpart, the physical edge, the fourth dimension edge is a transition zone, or blending zone. And, like the transition zone of its counterpart, this zone is always more concise than either of its parent periods. One unique quality of the fourth dimenison edge is that it is, and probably always will be, unaffected by man. For instance, while man can alter the edge of a field and woods, he can have little effect upon the occurance of dawn or dusk, fall or spring.

The physical edge is noted for its tendency to produce both greater numbers of organisms, and greater numbers of species in its ecotonal community than does either of the parent communities. This concept also applies to the fourth dimension edge. Needless to say, at dawn—as the nocturnal organisms surrender the ecosystem to the diurnal organisms—there is a more diverse group of active organisms than there was in the complete darkness of night, or than there will be in the complete light of day. We have a blending of two diverse communities. Likewise, one needs only to witness fall and spring migrations of many species, the increased activity before or after hibernation or the shedding of tree leaves to realize the effect of the transition period between the major climatic seasons.

Now let us make a few com-

1. Eugene P. Odom, Fundamentals of Ecology, p. 278.

parisons of physical edges and fourth dimension edges. Perhaps we can make a valid comparison of the edge of a field and woods and the edge of day and night, dawn. The narrow band, or transition zone between the field and woods is a very good example of an ecotone. Here we find a greater diversity of life than is contained separately by either of the parent communities—the field or the woods. This narrow ecotone usually has its own type of cover vegetation, and is inhabited by organisms from both the forest and the field. For example, at the edge of a forest and a field, one might find the squirrel and flicker from the forest as well as the field mouse and grasshopper from the field, mingling together in a thicket of low underbrush, vines, and briars. Also, one is likely to find the quail in this ecotone, for he is often deemed as its product.

The qualities of dawn, the transition period between night and day, with a little imagination, are not too unlike those of the edge of the field and woods. Dawn is the time at which there is a blending of the activities of both the nocturnal and diurnal animals. As the first rays of light enter a forest, the majestic gobble of a wild turkey is shattered by the eerie cry of a whip-poor-will. As a gray squirrel stretches on limb outside his den, a deer eases through the underbrush below, ready to bed down after a long night of grazing. A little brown bat flits through the trees, diving erratically at gnats, and taking advantage of his favorite time of day. During this transition period, we will observe a far more diverse array of active animals than we would either two hours earlier or two hours later.

ANOTHER good comparison of physical and fourth dimension edges might be the comparison of the transition zone at the edge of the sea and the transition period between the summer and winter—fall. It would be folly to attempt to elaborate here the extent of the involvement of living organisms in either of these ecological edges. But, perhaps, equal in magnitude to the delivery of life at the edge of the sea is the effect upon living organisms of the changing of the climatic seasons.

For example, during the edge, or transition period between summer and winter—fall—a vast variety of changes are triggered or effected in living organisms. One of the most obvious and most beautiful examples of the effects of this transition period is the coloration and shedding of the deciduous tree leaves, as the trees seem to anticipate the coming of their winter dormancy. In the animal kingdom, the great fall migrations take place, resulting in vast increases or decreases of both species and numbers of animals in given areas. During this same time of transition, the mammals begin to grow their winter coats, and there is a marked increase in their activities as they store food for the coming winter, or, as in some species they engorge themselves in anticipation of winter hibernation.

In the transition period known as spring, we might observe more vast migrations, the shedding of winter fur by mammals, and the emergence of the hibernating animals. We might also observe the increased activities and geographical movements associated with the mating urge. New leaves sprout forth on the trees and other vegetation.

Truly, in these transition periods between our two greatest seasons of summer and winter, we have a greater movement of living organisms, and greater physical changes within the individual organisms than in either the preceeding or the succeeding season. Species may be seen in areas they are not usually seen, as migrations occur. The transition periods, fall and spring, are much shorter than either of the parent periods, summer or winter, and are usually marked by the increased activities and numbers of living organisms. Why then cannot this transition zone, or transition period, be accredited as being a fourth dimension edge, or a fourth dimension ecotone?

Surely, a study of the edge effect should include the dimensions of length, width, and depth. These four dimensions are inseparable. Take away any one of the four and there is nothing. We should study the physical edge and the fourth dimension edge together as the "complete edge."

Separate studies of the sea shore, the dawn, and the fall should be followed by the study of the "complete edge," or "complete ecotone:" the edge of the sea at dawn, during the fall of the year. How much this heretofore neglected "fourth dimension edge" adds to such a picture!

Each time period has its own group of creatures stirring; both day and nighttime roamers inhabit dawn and dusk hours.

JOEL ARRINGTON

Mystery of the Eel Unfolded

by Roger Latham
Outdoor editor of the Pittsburgh Press

THE American eel (*Anguilla rostrata,* Le Sueur) is a catadromous fish. This high-sounding scientific term merely means that the fish leaves fresh water and goes to salt water to spawn. Far more common are the fish which leave salt water and swim up the fresh water streams to deposit their eggs. Salmon, striped bass, shad, and many others are examples of this latter kind, called anadromous fish.

During the fall from September to November, the mature female eels move from the headwaters of our streams and start toward the ocean. At this time some of these females may change from the usual yellowish

color to one where the back is a bronzy-black and the belly a milky-white or silver. These are called "silvers" by the eel fishermen. Even the head may change somewhat, becoming more pointed, and eyes grow larger.

These mature females, many now 2½ to 3 feet long, move only at night and usually start their journey on a rise in the water during or immediately following heavy rains. As they enter brackish water at the heads of the bays emptying into the ocean, they pick up their small mates which have been waiting for them. The male eel rarely grows to be over 16 to 18 inches in length and evidently does not migrate far above tidewater.

Then together and mysteriously, they move off into the ocean. How fast they travel and how deep they swim no one knows, because eels have never been seen in migration after they leave the continental shelf. Their destination is the Sargasso Sea, a spot in the mid-Atlantic where the water is the warmest and where the Gulf Stream is supposed to originate. This spawning area lies south and southwest of Bermuda between the latitudes of 20-30 degrees north and longitudes 60-78 degrees west. And here in this tropical sea, hundreds of fathoms below the seaweed-clogged surface, the eels deposit their eggs.

All the mature migrating eels from the North American continent, from Labrador southward to Panama and the West Indies, have gathered here to fulfill their reproductive duties and then die. But these American eels can't claim the Sargasso as their own. For there are millions of European eels there, too, and in many places their breeding grounds overlap. The European eel (*Anguilla vulgaris*) is a distinct species although it can hardly be distinguished from our eel except that it has an average of 114 vertebrae in the backbone while our fish has an average of only 107 vertebrae.

Very Prolific

Each female is capable of producing 5 to 20 million transparent, almost colorless, tiny eggs depending on her size (one 32-inch eel produced 10,700,000 eggs by actual measurement.) A week or so later the eggs hatch and both species begin life as a tiny larva about one-quarter inch in length. These are so thin and transparent that newsprint can be read through them. They remain 600 to 900 feet below the surface for a time and then rise to the upper layers and begin to float northward. When these billions of tiny larvae, called leptocephali, reach the vicinity of Bermuda, the American variety moves westward while the European species turns to the east. Just how this happens is not clear, because the tiny larvae appear to be drifting with the currents and only weakly able to swim toward their respective homelands. The interesting part of all this is that as far as is known no American eel has ever been taken in European waters and no European eel has ever been caught on the North American continent.

The larvae continue to drift and feed on tiny plankton organisms and reach a length of about two to three inches by the time they reach their respective shores. The trip to the west takes only one year but the larvae of the European species do not arrive for about two and one-half years. When they reach the mouths of the rivers and the brackish water, they undergo a major change. They lose their thin leaf-like form, get a new set of teeth, and gradually grow to

look like miniatures of their parents. These three-inch eels are then known as elvers and the ascent of the rivers begins.

Until the exhaustive investigations of Dr. Johann Schmidt, a Danish scientist, almost nothing was known of the life history of the eel. Through the time of Aristotle, Pliny, Athenaeus, and Oppian and through the Middle Ages, the only explanation for the generation of eels was through a spontaneous origin from mud, slime, dew, horsehair, skins of old eels, and other similar nondescript sources. In 1545 a literary work of Albertus Magnus stated that "the eel comes out of the water in the night-time into the fields, where he can find peas, beans, or lentils."

In 1777, the ovary of an eel was first recognized by a professor of anatomy at the University of Bologna, and thus sex in eels was established. Ninety-five years later a male was last identified. The first larval eel was not found until 1846 when a German, Johann Jakob Kaup, discovered a small ribbonlike fish in the sea. He preserved it in alcohol, named it *Leptocephalus brevirostris,* and scientists paid no further attention to it. A half century later, two Italian scientists, Gracci and Calandrucci, collected a similar fish in the Mediterranean. This specimen was more fully developed and these two men identified it as a young eel.

Then in 1906, Dr. Schmidt started his 15-year investigation of the eel and its reproduction in the Atlantic. All during this long period, he trolled nets from one side of the Atlantic to the other, measuring the size of the eel larvae wherever he found them. He reasoned that the tiny fish were growing on their journey back to their homelands, and that wherever he would find the smallest larvae in the greatest abundance would be the breeding and spawning area. His ever-narrowing search led him finally to the Sargasso Sea.

But there are plenty of things still not known about eel. In the Maritime Provinces of Canada, poisoning of lakes containing eels revealed that at least nine age groups were represented. The dominant age groups were those with two to three annual rings on their scales. Because eels do not get scales until they are three years old, this means that the majority of the eels in lakes are five and six years of age. The studies there also showed that most of the female eels migrating to sea to spawn were seven to eight years old. Some migrating females are as old as fifteen years. Why some of the females reach sexual maturity and make the spawning run years before others is impossible to explain with present knowledge. Examination of these runs revealed that silvering was manifest only among a portion of the largest eels. All those under about eighteen inches were yellow, and among the larger ones both yellow and silver fish were evident, with various gradations between these colors.

Recently, fishery biologists have discovered that fall runs of large eels from salt water have come up the river of Nova Scotia. This was unrecorded prior to this time. They also found that the number of eels leaving certain of the study lakes on the spawning run varied greatly from year to year and from lake to lake.

Now what do eels mean to fishermen? First, do they do any harm? It might be well at this point to make sure that the reader understands that the American eel is not the sea lamprey which has caused so much destruction to valuable fish in the Great Lakes and other waters. The American eel has a true mouth with jaws and paired fins. The lamprey, on the other hand, has an almost circular buccal funnel which is lined with sharp teeth. It attaches itself to its victim by a strong suction pressure, tears a hole through the skin and into the flesh with the tongue teeth, and then proceeds to suck the blood from the host fish. This usually results in death in a few hours to a few days. Eels have gills and gill covers whereas the lampreys have seven gill openings in the form of small holes in each side of the body behind the head. Eels possess scales after the third year, but lampreys never do.

But the American eel is a predator on other fishes and may be a serious competitor for food under some circumstances. In New Brunswick and Nova Scotia, the eel is considered as an important predator and competitor of the speckled trout and the Atlantic salmon. Characteristic scars were found on some of the yearling and older trout in one study lake, and the conclusion was that eels were eating a good number of small fish. Of particular concern to the investigators was the fact that the eels were spending more years in the lake than the lifespan of the trout. Control of predators, including eels, appeared to benefit the trout population. But in this connection, it was found that eels were not present in streams where the water temperature was below 50° F. This meant that most of the smaller brook trout streams were free of eels and the young brook trout suffered no mortality from this source. European investigators discovered that at temperatures below 50° F., eels are unable to form antibodies and thus develop immunity to infections. This could be one explanation why they do not frequent cold-water streams and lakes.

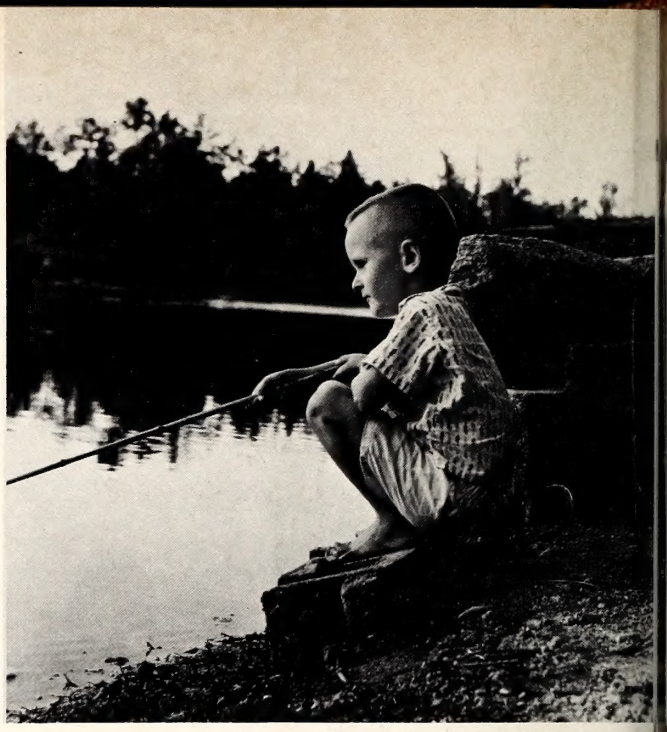
In warm-water rivers and lakes, predation by eels is far less serious and may even be beneficial where stunted populations of panfish or game fish occur. In many of these waters, the eel is a favorite sport fish and may be more popular than many of the better known species.

Besides being taken on hook and line, eels are caught in several other ways in some states. Commercially, eel racks are operated in several states. In this method a wide V of rocks is placed in a river with the point downstream. Each of the wings of the V may be several hundred feet long. This leads the migrating eels into the narrow opening at the apex of the V where they are caught on eel racks. The racks are merely a series of catching boxes made of narrow strips of wood nailed parallel so that the

• **continued on page 22**

Start Them Young

Youngsters are, by their very nature, full of energy and enthusiasm. They have an endless thirst for knowledge about the world of living things. With a little encouragement and understanding, the enthusiasm of youth can be cultivated. Here are some adventures of the author's young son and the lessons he learned from his outdoor experiences.

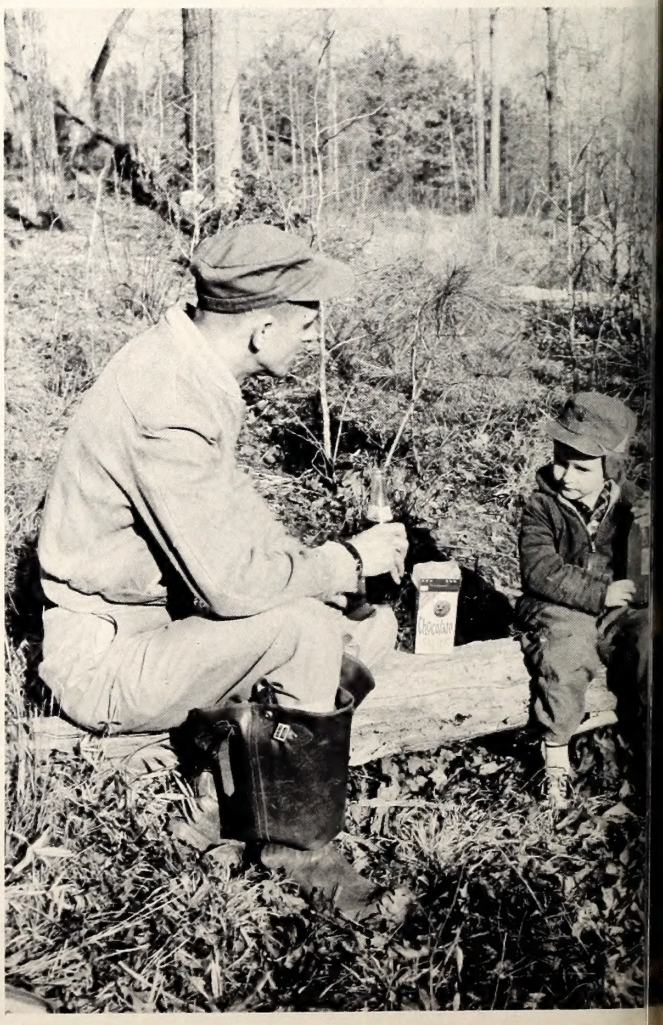


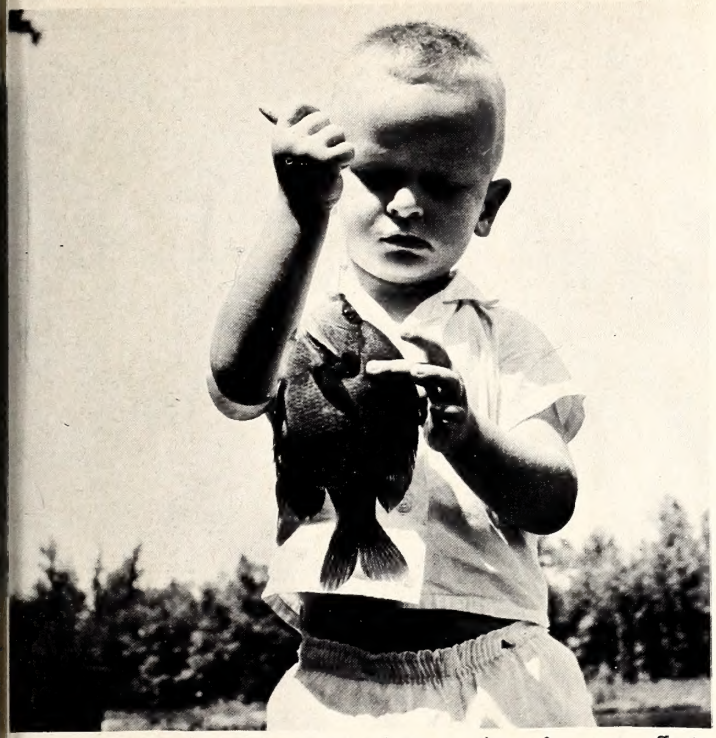
Fishing develops patience and self-reliance. Our youngster wonders if that cork will ever disappear.

Photo Feature by F. Eugene Hester

With a small investment of your time and effort, a boy can learn to be your life-long outdoor companion.

Management is an important phase of wildlife activities. Here, a piggy-back ride provides a look at a wood duck nesting box and a chance to learn how to have more ducks. Future supplies must be considered.





It's nice to have something to show for your efforts. A fat bluegill is a fine reward for skill and patience.

Wide-eyed youngsters listen to the "peep-peep" of a baby duckling. They observe the miracle of hatching.

By the time a fellow is three he can learn the value of hunting dogs and the responsibility for their care.

Minnows and their elusive ways are the lesson for today. What's more exciting than a wiggling fish?

Why Conservation Education?

by Dr. J. J. Shomon

This is Chapter 2 of the Outdoor Conservation Education Manual published by the National Audubon Society.

JOEL ARRINGTON

DURING the past century, the growth of our population and the unwise and wasteful use of our lands and natural resources have pointed to the need for a greater understanding and appreciation of resource problems and conservation. In the early part of this century Theodore Roosevelt called the nation's attention to this need, and through his vigorous leadership a strong and effective national conservation policy was established, a policy that led to the creation of many of our national forests, parks and wildlife areas.

Today, however, the capacity of many of our existing national outdoor areas has become overtaxed, and if the present trend continues these facilities will become wholly inadequate to meet future needs. More important, unless people are given deep insights into the natural world around them and have the opportunity to form proper attitudes and a correct conscience, no amount of recreational opportunity, no amount of additional facilities, will be of much avail. People, by their very numbers, presence and behavior, will destroy what they seek. Some hope for easing this dilemma lies in education and in zoning for particular uses and for limiting the numbers of users of certain areas.

The mechanized age of dramatic dimensions in which we suddenly find ourselves is marked by dynamic changes in living. Higher wages, more leisure, better and more rapid forms of transportation and communications, not to mention the presence of more and more people, are creating deep social repercussions in our way of life. The challenge that lies ahead in conservation is to build public understanding and attitudes which will give our citizens an "ecological conscience." Without such a conscience, we will continue to sully, to destroy, to denude, to litter, to mine prodigally the resources we have.

A significant product of our time is the rather new and seemingly constant search by people for *livability*. Today attractive living places—pleasant surroundings and opportunities for creative, productive family leisure—are becoming prime factors governing our economy and way of life. For the first time in history, pleasant living conditions rather than more narrowly defined economic advantages and material things are becoming important factors which determine population densities and social trends.

There was a time when city fathers believed in the idea that cities and their industry attract people. Now times have changed. As George Cline Smith, vice president of the F. W. Dodge Corporation, puts it: "From hereon out the situation will tend to reverse itself. Industry will want to go where the people want to live."

Not long ago men, women and children lived close to the land. Even so recently as a generation ago more than three-quarters of our people lived and labored in rural areas—working on farms, in forests, sustaining themselves close to nature and natural resources. Now the pattern has been reversed. Since the industrial revolution, and especially since World War II, science and technology have hastened the severance of man's ageless ties with the land, allowing him to become seemingly self-sufficient in urban centers.

A great many people who seek communion with nature surely want something more than benches, picnic tables and fireplaces. Many desire places where they can learn something about the natural world in which they live, where through better appre-

ciation and sharper sensibilities they can learn how to lead richer, fuller lives. Many surely want wholesome, untrampled places near at home where they can learn about wildlife, trees, wildflowers and rocks—where they can see and hear and feel wild things for themselves. These people crave and should have places where their eyes can be opened to the wonders of Creatoin, where all of nature can be exciting and adventurous. In short, they seek some quality in outdoor enjoyment and leisure.

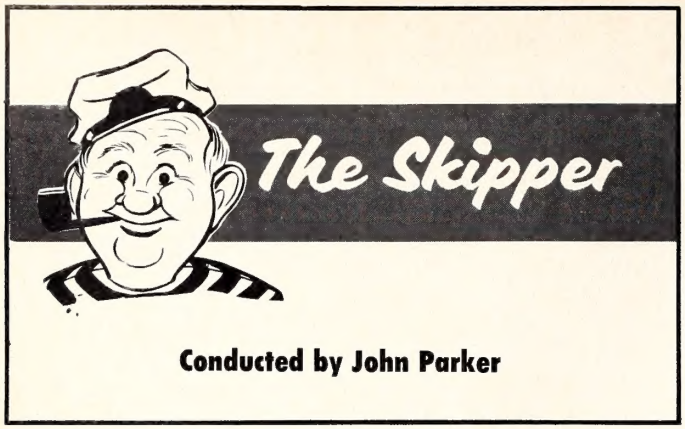
THE time has arrived in America for the setting aside of some outdoor lands for learning and enjoyment. Such centers can take many forms, yet their objectives should be the same: *to combat continued resource abuses, to fight ugliness in blighted cities and strip suburbia, to curb juvenile delinquency, to preserve vital segments of our outdoors, and to give to children and adults wider vision, better skills and deeper perspective in living.* All these are reasons enough for establishing such outdoor centers and for developing within such areas dynamic programs of outdoor conservation education.

In this shift from an agrarian social structure to an industrial society, people have lost important ties with nature—with land, pastures, hayfields, farm ponds and forests, farm animals and with much of Mother Earth in general. They have broken their contacts with soil, water, wildflowers and wild creatures—and many of these same people are concerned. They're worried because they suddenly realize that there is something missing in our culture which in our parents' day seemed to have more special meaning in life. There is a growing realization today that unless leisure is used more productively, unless there is also some *quality in recreation,* it can and very well might backfire on society. There can be such a thing as too much mass leisure.

U. S. FOREST SERVICE

Before we can instill the responsibility of conservation in others, we must be convinced of its necessity.

It seems obvious, then, that there needs to be a new ground swell of interest in nature, to return families, school children and youth groups, adults and senior citizens once more to our age-old kinship with the land. This time, however, the return must be for enlightenment and inspiration. There is already ample manifestation of man's interest in outdoor recreation. Our national and state parks are swelling with visitors. Five times as many vacationists are now using national forests and parks as used them ten years ago. Our national wildlife refuges and state game management areas are bursting at the seams with recreation seekers. Never before in the history of America has outdoor recreation held so much appeal for so many growing millions of our citizens. Yet we must ask ourselves if the time has not come to pay some attention to defining the ends of what we seek.



Conducted by John Parker

AFTER a long and anxious drive to that favorite fishing or hunting spot most boaters want, without delay, to start the old kicker or big power plant that hangs on the stern and be on their way. But, of course, there is that interim step that must be taken prior to setting out for the place that paid off last time. Obviously we must launch the boat before we can go anywhere. And the safe boater makes a final check of boat and equipment prior to shoving off.

Launching a boat often varies from backing the rig down a double ramp at a fully-equipped marina —to sliding a boat down a clay embankment. While it may take only a few minutes to launch, park the car (don't forget the emergency brake) and get underway at a marina or at any paved ramp access area, the story can be much different on occasion. It can be different and often is at those out-of-the-way places that are just waiting to be hunted or fished. Such places may have little if any boating access.

Launching at a marina may be compared to painting your boat, you don't do hand stands at the thought of it but it can be fun. However, launching at one of the other places may simply be a lot of hard but necessary work. But when using such a place permits a day of good hunting, fishing or boating it may be well worth the effort.

I am not suggesting that you attempt to lower your boat into a gorge as is sometimes depicted in the western movies concerning the covered wagon. I am suggesting that the muddy or sandy access area or sloping creek bank can be safely negotiated. While you may not wish to make a habit of using such an area, it may, at times, save miles of driving and backtracking with boat and car.

When a launching ramp such as this is available, getting the boat in and out of the water isn't too much of a problem.

JOEL ARRINGTON

A little extra caution and some simple equipment will make these rough areas more workable.

Let's take a typical situation where we have a muddy, gradually sloping area that is the only doorway to the upper end of "Fabulous Fish Creek," and run through what is needed to put some water under the hull of a 12-footer.

Getting the car unstuck is a real waste of time. Therefore, knowing how close to the water to drive the old bus is highly important. Many a person has lost hours of recreation time by backing "just a little further" down a marginal "ramp."

In some cases you may not be able to back close enough to slide the boat from the trailer into the water while at other times you will. The tilt-bed trailer will help in this and all types of launching but is not the complete answer. At any rate, check the area thoroughly and decide where lies the best footing for your car. Once you have decided to stop, stick to your decision. From that point uncouple the trailer and proceed.

If you do get stuck, that shovel that you thought to take along will come in handy. And those metal tire mats that you bought at the local auto supply for a small price may even prevent your having to do any digging. A couple of wide, rough boards are good for this but not so handy to carry as the mats mentioned. If you did not think to take along a special device, then most anything will help—cardboard, sticks, etc., will offer some traction but be careful of what you put down so as to prevent tire damage. A few seconds of wheel spinning on the wrong surface will lose for you a thousand miles of tire wear. Also, don't forget that partial tire deflation and the car jack will aid during such embarrassing moments. Other items that may come in handy at remote areas are a set of battery jumper cables, a tow cable and perhaps a large lamp to light up the loading area. One that plugs into the car cigarette lighter will work fine.

Since we have stopped the car at a safe distance from the water we will have to use a little muscle power to launch this time. On a gradual slope it is easy enough to uncouple the trailer and roll it to the waters edge. If the slope is steep you can use the trailer winch to ease the rig down the hill. Hook the winch line to the car bumper and let out on the winch gradually.

A rope tied to the trailer and looped around the trailer hitch ball can also be used to restrain the trailer. In either case a second party should be on hand with something to chock the wheels in the event you get in trouble. It is also a good idea to chock the car tires. You should carry blocks of wood for this as the chances of finding something handy at the launching site are slim.

In the operation described above, the trailer tongue would normally be dragging on the ground so that you would have both hands free to operate the winch or rope. Since most trailers have some

type of skid attached just behind the coupling mechanism, this dragging will probably not damage anything. There is, however, a chance of getting dirt in the couple or dragging the tail-light wire, etc. This problem can be eliminated with one of the third wheels that are on the market. One brand I have in mind sells for about $10.

The wheel is about eight inches in diameter and the device is easily bolted to the tongue of the trailer. This will also serve as a stand or dolly to keep the tongue off the ground, when the trailer is not in use. Plus, it makes this whole operation easier.

If you do use the winch line rather than a rope, the boat will be sitting free on the trailer as the tie-downs are usually taken off early in the launching phase. For this reason your partner, assuming you have one, should hold the bow line and be ready to push the boat free once the trailer is in position.

The loading procedure is more or less a reverse of the launching procedure, using either the winch or the rope and car to pull the trailer back up the hill or from out of a muddy area. Do this slowly. Wheel blocks should be used when trailer and/or car is stopped on a steep incline for loading or unloading.

Once the boat is in the water, the loading of tackle, guns, etc., can be easy if you are on level ground but footing can be tricky at wet, inclined landings. Secure the boat along the bank so that it will not slip from beneath you as you step in. However, take care not to bridge the boat; that is, having the middle part of the bottom dry with the stern in the water and the bow on the bank. This can be especially damaging to lightly constructed boats. Secure the boat parallel to the bank or beach so that it is not bridged.

It is a good bet that such a place as we are dealing with here, since it is not used by the multitudes of boaters, may have underwater obstructions not yet found and removed by others. Of course, extra precautions should be used here as in any unfamiliar waters.

In the case of all access areas be they good or bad, we should always be courteous and thoughtful when parking, disposing of trash, gaining use permission, if necessary, etc. Be sure you leave room for the next fellow who decides to use the back waters of Fabulous Fish Creek.

Winch, cable and hooks should be in top condition and of sufficient size to withstand the added stress of this sort of operation. The author uses a heavy-duty winch and steel cable.

JOEL ARRINGTON

NORTH CAROLINA WILDLIFE

RESOURCE-O-GRAM

A ROUNDUP OF THE LATEST WILDLIFE NEWS

National Wildlife Week March 14-20

The National Wildlife Federation has adopted a theme for this year's National Wildlife Week that will affect every citizen of the state and nation: "FIGHT DIRTY WATER." Water pollution has become one of the major problems in natural resource conservation. Present per capita consumption of water now stands at 150 gallons per day, and by 1980 the country will need 600 billions of gallons of water daily. Clyde Harmon, Greensboro, is Week chairman, and urges civic organizations as well as wildlife clubs to give special emphasis to water pollution control during the Week.

Check Your Fishing License and Boat Registration!

With the fishing and boating season rapidly approaching, Tar Heel outdoorsmen are urged to make sure their fishing licenses are current and their boats duly registered and numbered. All boats powered by machinery of more than ten horsepower must be registered and have the assigned number properly displayed before they may be operated legally. County and state fishing licenses are valid during the calendar year, while combination hunting-fishing licenses are valid from August 1 to July 31. Fishing regulations are issued with fishing licenses, and boating regulations are issued with registration certificates.

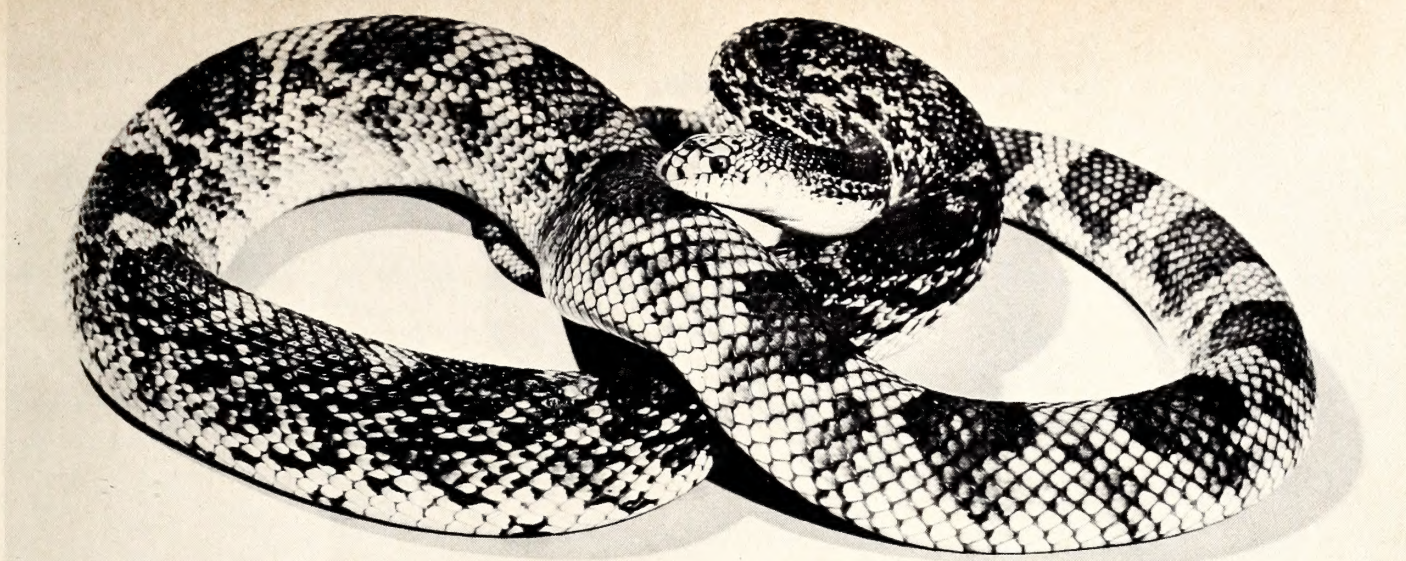
Commission to Ask for Uniform Waterway Marking System

The Wildlife Resources Commission will ask the 1965 General Assembly to adopt a uniform waterway marking system promulgated by the Council of State Governments. The marking system consists of markers easily recognized by shape and color, and is designed to do for the waterways of the nation what the uniform street and highway marking system has done for motor vehicle traffic.

Increased use of the state's waters for fishing and pleasure boating has brought about a need for zoning and traffic control.

Hunting Seasons Closed

When the hunting season for raccoons and opossums closed March 1, the 1964-1965 season for migratory and native game species came to an end except in counties where local law permits fox hunting after that date. Other legal targets are groundhogs and crows.



The Pine Snake

JOEL ARRINGTON

by William M. Palmer and Franklin F. Snelson, Jr.

THE pine snake, *Pituophis melanoleucus,* is one of the most striking of north Carolina serpents and may be easily recognized by its large size and whitish coloration with brownish or rust-colored blotches down the back. The underside is virtually unmarked and resembles polished white marble. A characteristic habit of hissing loudly when disturbed will aid in distinguishing it in the field. This attractive species is one of our largest snakes, attaining a maximum length in excess of six feet.

Represented by four subspecies, the pine snake ranges from southern New Jersey south throughout much of peninsula Florida and west into east Texas. Another race occurs in the prairie regions of the United States and several other forms are distributed through the western states. With the exception of a few specimens collected from the mountains, this species in North Carolina is primarily an inhabitant of the southeastern coastal plain and the "Sandhills." From available specimens and records in the State Museum of Natural History, pine snakes are most frequently found in the Sandhill counties of Hoke, Moore, Richmond, and Scotland.

Throughout much of the eastern range the actual occurrence of specimens is spotty, for the species apparently is restricted to a definite type of habitat. Thus the preferred common name of pine snake certainly is a most appropriate one. The dry, sandy areas of pine and scrub oak form an ideal environment for this accomplished burrower which is not often seen abroad. However, following periods of extensive rainfall these snakes are not uncommonly observed prowling above ground and crossing roads traversing suitable habitat.

When surprised in its native haunts, the pine snake will assume a defensive pose, rapidly vibrate the tail, and hiss angrily. The common habit of violently hissing when molested probably has resulted in the local name of "bull snake," although the hiss is hardly comparable to the bellowing of an enraged bull. (The true bull snake, actually a subspecies of the pine snake, occurs in the prairie regions of the United States.) Much of this impressive defensive behavior is a bluff; however, if handled roughly or carelessly, most specimens will not hesitate to bite. Fortunately the bite of a harmless snake need be given no more medical attention than the application of a good antiseptic.

Unlike most of the large harmless snakes, the pine snake generally remains restless and feeds irregularly in captivity. Some individuals will refuse food entirely and ultimately starve to death under captive conditions.

Pine snakes are powerful constructors, killing prey by suffocation in strong and efficient coils. The species feeds to a great extent upon rodent pests, but the eggs, young, and occasionally the adults of ground-nesting birds are also included in the diet. Although there have been no comprehensive studies regarding specific food preferences, their predation upon rats, mice, and other small mammals probably far outweighs that upon birds and their eggs. These snakes should be considered among our beneficial species.

No information is available concerning the breeding habits of this species in the State. Presumably mating occurs in the spring; and the eggs, numbering up to 24, are deposited during June or July under logs, in rotting wood pulp, and similar debris. The eggs probably hatch in late August or early September, the hatchlings being about 16 inches long.

There is sufficient space available in each habitat for only a certain number of species. A pine snake thoughtlessly killed might well result in a vacancy to be later occupied by a copperhead or a rattlesnake.

Next Month: The Corn Snake

ARASAN-42

by Sam F. Poole and Wilton Pate

CROP depredation by deer, rabbits or other wildlife sometimes becomes a serious problem in some sections of North Carolina. The importance of this problem is emphasized by the fact that the economy of our State is, to a great extent, based upon agricultural crop production.

The sportsmen of North Carolina and the Wildlife Resources Commission recognize that wildlife is a product of the land and its production must be in harmony with major land use—whether that use be for farming or forestry. Regulations are designed to hold wildlife populations at levels which will not be injurious to these major uses but in spite of our best efforts this is not always successful. In such cases special deterrents are often effective.

Some methods which have provided varying degrees of relief are: firecracker ropes, shell crackers, dogs, and electric fences. Mr. Alford Shingleton of Hampstead, N. C. uses tin cans with rocks in them and metal plates tied so that they hit and rattle in the wind. This method protected his two acres of soybeans in a heavily populated deer area. All these methods work to a degree, but none are completely effective.

The electric fence is by far the most effective, as one or two strands of electric wire strung around the crop usually does the job. A few breaks are usually made by the deer at first, but once the deer, or other animal, hits the wire and is shocked, he usually avoids further contact and stays away from the field. In this method, maintenance is necessary since grass, weeds, and other debris must be kept off the electric wires.

For small fields of specialized crops, such as flowers or crops grown for seed, a 10-foot heavy wire fence will effectively keep out deer and other animals that are likely to cause damage. This would be quite expensive for larger fields or entire farms.

Recent trials indicate that a new chemical, ARASAN-42-S may be an effective, practical control. Pressure spraying of ARASAN-42-S has been tried by Mr. Walton Broome, Aurora, N. C., and Mr. Arthur Whitford, Ernul, N. C. Mr. Broome believes that crop depredation of his 640 acres of soybeans was cut by 2/3 after one application of this chemical. He recommends spraying the field borders to a width of 20 feet. Spray should be applied when the beans first sprout, for this is the most critical time. This application was in the middle of May and was effective for one to two months. Effectiveness could possibly be increased by as much as a month through use of a sticking agent such as Rhoplex AC-33. The cost was $7.50 a gallon, or around $90 for the treatment of 640 acres (1 square mile) of soybeans. The $90 that Mr. Broome invested saved him an equivalent of $500.

As a bonus to both the landowner and the sportsmen, numerous deer were saved that will be available for hunting. Extra income from hunting rights is provided the landowner and excellent deer hunting is provided the sportsmen. This chemical approach, therefore appears to be worth trying on a broader scale.

General Information On Its Use

ARASAN-42 is a fungicide and repellent. It is sometimes called Thiram, and its technical name is Tetramethy a Thiuramdisulfide. This name identifies its chemical composition, but we hope it means deer and animal repellent.

ARASAN-42 protects fruit trees, shrubs, ornamental, and nursery stock from rabbit and deer depredation when used correctly. One application protects treated areas from one to three months. ARASAN also effectively repells raccoons and birds.

Apply ARASAN-42 spray before the expected time of damage. Thoroughly cover the treated area well above the reach of the animals. Apply under favorable drying conditions and use a "sticker." Mix only the quantity to be used. Mix at the rate of one quart ARASAN-42-S with three quarts of water; for longer protection mix at the rate of one quart to two quarts of water and one quart of semi-permanent type sticker, such as Rohm and Haas Rhoplex AC-33 or Dow's Latex 512-R. Apply with a hand or power pressure sprayer to give a heavy coating to the twigs and foliage. New growth may have to be treated again. *Do not use on plant parts that are to be used for food or feed.*

There is no warranty of any kind, expressed or implied, concerning the use of this product. Persons using it assume the risk of use or handling whether in accordance with directions or not.

All nozzles used in spraying should be thoroughly flushed and cleaned. Mr. Walton Broome uses a small blow torch for the final cleaning of spray nozzles.

ARASAN-42 is made by the DuPont Company of Wilmington, Delaware, and is available from most farm supply stores.

DEPARTMENT OF LETTERS TO THE EDITORS, FIELD NOTES, AND ITEMS OF INTEREST

Conducted By Rod Amundson

Someone said that about the best thing you can say about the month of March is that it is one month closer to spring than February, with a weather forecast of strong winds followed by small boys with kites.

March sees the first buds and birds of spring in North Carolina, while at the same time it is a critical period for such small game species as bobwhite quail and mourning doves. Food is scarce in late winter and early spring, and populations are at the seasonal low. It is during this critical period that plantings of shrub lespedeza and multiflora rose—thousands of acres planted by thousands of farmers—really pay off in game survival. Hundreds of thousands of Tar Heel small game hunters owe a debt of gratitude to these farmers.

Sportsmen, conservationists and a multitude of others were saddened by the death of Joseph J. Stone of Greensboro at the age of 97. Following is a resolution adopted by the Wildlife Resources Commission at its January, 1965 meeting, and part of an editorial written by W. H. Kendall, Editor of the *Greensboro Daily News*:

WHEREAS, He lived to see the development of a wildlife conservation program in North Carolina; and

WHEREAS, He served as a leader and a guiding light in the creation and development of this program; and

WHEREAS, He was one of the men who worked long and ably for the establishment of the North Carolina Wildlife Federation and later the Wildlife Resources Commission; and

WHEREAS, He devoted nearly a century to conservation and to true sportsmanship as a hunter and a fisherman, thus setting an example and a course for other men to follow:

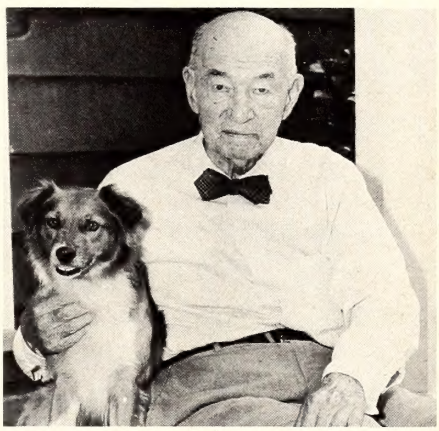
NOW, THEREFORE, BE IT RESOLVED, That the North Carolina Wildlife Resources Commission in official session in Raleigh, North Carolina, this twenty-fifth day of January, 1965, does mourn the passing and honor the memory of the late Joseph J. Stone of Greensboro, North Carolina.

BE IT FURTHER RESOLVED, That this resolution be spread upon the official minutes of the Wildlife Resources Commission.

No one could have done more for wildlife conservation in North Carolina than he did. Soon after Governor O. Max Gardner put him on the newly created State Board of Conservation and Development, he was given the chairmanship of the board's inland fishers division. Immediately he took the lead in setting apart what were recognized as North Carolina's best fresh-water fishing areas for sports fishing. And the full wrath of the commercial fishermen who had been using their nets indiscriminantly in these waters descended upon him. And for those who did not know it, no wrath is comparable to that of aroused fisherfolk. "Mr. Joe" received repeated threats; it actually would have been dangerous for him to have gone into the Currituck Sound or Alligator River country. But he stuck determinedly to his goal, and it was only a few years until his enemies of the fishing country became his closest friends.

I know "Mr. Joe" is where all good fishermen go. After all, Saint Peter was a fisherman on this earth. And no one could blame him if he temporarily turned his post at the pearly gates over to a subordinate, personally escorted "Mr. Joe" to fishermen's paradise, sat in on a meeting of the Highlanders' Club, went aboard the good ship Greensboro and compared notes with "Mr. Joe" and his reunited comrades on fishing in Second Creek, Currituck Sound, the Pungo River and at the cape with the catches he and his fellow fishermen made in the Sea of Galilee.

Happy fishing "Mr. Joe;" and have some bait ready for those of us who are to join you.



Joseph J. Stone

There are two schools of thought among government officials and foresters charged with the responsibilities of forest fire prevention and suppression. Many of these men firmly believe the best way to prevent forest fires when the fire risk is great (as it was over most woodlands in the eastern United States during fall droughts the past two years) is to keep everyone out of the woods. Other forest management and protection agencies believe the more people using forestlands, particularly sportsmen who generally are aware of the danger, the less chance of fires being started accidentally. They also reason that with more people spread throughout the woods, the faster any fires that do start are reported and brought under control.

The Missouri Conservation Commission, charged with management of both wildlife and forests, faced this question last fall when dry woodlands posed extreme fire risk at the same time some 120,000 deer hunters were scheduled to go afield for the start of the 1964 open hunting

KNOW YOUR PROTECTOR

William Preston Barber, Jr.

William Preston Barber, Jr., Wildlife Protector stationed at Elizabeth City was born in Atlanta, Georgia. His parents are Mr. and Mrs. W. P. Barber of Cleveland, North Carolina. Barber is a graduate of Presbyterian College, with a B.S. Degree, majoring in Economics.

After completing the Pre-Service Training School for Wildlife Protectors at the Institute of Government in Chapel Hill in 1954, he was employed by the Wildlife Resources Commission in March, 1955 as a Wildlife Protector Trainee in Pasquotank County. Barber has attended six in-service training schools since his employment.

Protector Barber is a member of the Southeastern Association of Game and Fish Commissioners, Peace Officers Association and the Junior Chamber of Commerce. He is married to the former Geraldine Myers of Cleveland, and they have two daughters and one son. The Barbers reside in Elizabeth City and are members of the Presbyterian Church, where Barber is a Deacon.

DIVISION ENFORCEMENT RECORD FOR SEPTEMBER, 1964

HUNTING & FISHING

Persons checked	29,039
Total prosecutions	726
Total convictions	716
Total cases not guilty	4
Total cases nol prossed	6
Total cases dismissed	0
Total Fines collected	$3,021.35
Total Costs collected	$5,298.10

BOATING

Boats checked	3,699
Total prosecutions	116
Total convictions	114
Total cases not guilty	1
Total cases nol prossed	1
Total Fines collected	$ 507.50
Totals Costs collected	$ 991.80

All fines and any arrest or witness fees are paid into the school funds of the counties in which the violations occurred, and no part of the fines or costs collected are paid to the North Carolina Wildlife Resources Commission or its personnel.

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season. They let the season stand, however, and urged deer hunters to be prepared to locate, report and, if necessary, fight forest fires.

The result—during the first two days of the hunting season (after which the rains came to solve the problem), hunters helped fight and extinguish 26 of the 74 fires started. Fire fighters in one district had the help of three hunters on one fire—all three were women. In another district the forester in charge reported he had hunters help in fighting all five of the fires which broke out on the opening day of the deer season.

Backlash!

DEAR SIRS: No doubt the photograph illustrating the wildlife protector checking the hunter's license, which photograph is located on page 6 of your January, 1965 issue, was posed. Due to this, the carelessness illustrated by this photograph is compounded.

A magazine that advocates safety should illustrate safety. We all know that one of the chief causes of hunting accidents is the negligent handling of the weapon by the hunter; and the stock should never be placed on the ground with the muzzle pointing at the hunter's head as illustrated by your photograph. JAMES C. MACRAE, FAYETTEVILLE.

We appreciate having this called to our attention, and perhaps it simply serves to point up the problem of hunter safety. Unfortunately this is a characteristic pose. In this case the gun had been unloaded in a routine check for shell capacity.—Ed.

EEL

• **continued from page 11**

water can go through but the eels cannot. These are operated at night during the eel runs, and on favorable nights hundreds of eels may be caught. The fish are usually sold locally to those who have a taste for their fine flesh. Eels bring a good price and are much in demand as a food fish.

Another commercial-type gear is the eel pot or eel trap. These are almost always home-made and are generally of two types. The most popular is made of ½"-16 gauge galvanized wire netting, usually about 30 inches long and 9 to 11 inches in diameter. The two entrance funnels, one behind the other, can be made of wire or netting. Traps are baited with sand launces (*Ammodytes americanus*), sometimes called "sand eels," chopped squid, herring, alewives, and the roe of horseshoe crabs. Bait must be fresh

---

Rabbit Snare

PHOTO BY FRANK MONTGOMERY

Wildlife Protector Raymond Allen examines a rabbit snare which was discovered in his area during the winter. The stout sapling to which the heavy cord is attached might even upset a man if he happened into it in the dark. Not only is a device of this type dangerous to pets, it is unlawful in North Carolina. The bait here is half an apple placed in a noose carefully held near the ground by sticks. When the quarry disturbs the bait, the sapling springs the snare, leaving the small animal dangling by a leg or the neck until the captor returns. Some people will do anything.

and added daily. These are set in the evening and hauled in the morning.

When the fisherman arrives home with his eels, he may want to know how to dress them and prepare them for the table. Cleaning is easy. Either hang them by the gills with a piece of twine or nail the head to a board. Then cut through the skin the whole way around behind the head, grab the loose edge with a pair of pliers and strip the hide off in one piece. For frying or baking, the eel can be cut in pieces three or four inches long. When baking or broiling, the pieces may be placed on a metal rack so that the fat will drip away from the meat.

To smoke eels, the fish are cleaned, washed, drained, and salted. A fire of corncobs and hardwood sawdust is converted into a slow smudge and the pieces of eel are kept in the smoke for four to 15 hours depending upon taste and heat of smoke. A little sulphur added to the fire gives the fish a rich brown color. For smoking fish, an old refrigerator or icebox is fine. The fire is put in the bottom section and the fish are placed on racks in the top compartment.

In Italy, pickled eels are considered a delicacy. Even the value of the eel does not stop here. In Europe the skins are stretched and dried and used for lining whips, binding books, and making suspenders. In Tartary, the skin is oiled and used as a substitute for window glass. Eel oil is used in places to keep harness soft and pliable and for various medicinal purposes.

Truly a remarkable creature is the eel.

At its January meeting, the Wildlife Resources Commission reelected as its officers for the year Lee L. Powers (center), Lake Lure, Chairman; Walter Lambeth, Jr., (left), Charlotte, Vice Chairman; and Phil Ellis, Holly Springs, Secretary.

Wildlife Protector Miles E. Forbes (right) was honored with two major state awards during 1964. He is shown here with Protection Division Chief Bob Hazel and Outdoor Safety Supervisor John Parker as they admire the Service To Safety Award presented by the N. C. Rural Safety Council; this was for Forbes' outstanding service to rural safety in North Carolina. It was presented for his work in promoting hunter safety among the youth in Iredell County. He also devoted much time to promoting boating safety in this area.

The second top award which he received was the Wildlife Federation's Protector Of The Year Citation. In naming Forbes top protector for 1964, Federation Executive Secretary Turner Battle said this was the third year Forbes had been among the top three protectors in the Wildlife Commission.

JOEL ARRINGTON

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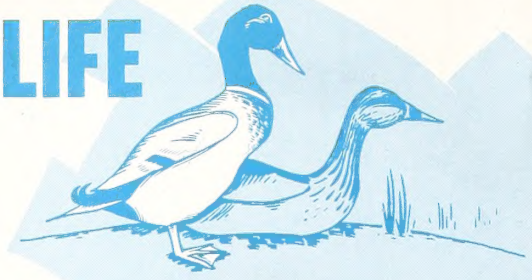

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NATIONAL WILDLIFE WEEK · MARCH 14-20, 1965

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Wildlife IN NORTH CAROLINA

APRIL, 1965

JACK DERMID

Fiddleheads of the Cinnamon Fern

STATE OF NORTH CAROLINA

DAN K. MOORE
GOVERNOR

NORTH CAROLINA
WILDLIFE RESOURCES COMMISSION

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WALTER LAMBETH, JR., V. CHM. _ CHARLOTTE
PHIL W. ELLIS, SEC'Y. _ _ _ HOLLY SPRINGS
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WILDLIFE IN NORTH CAROLINA recognizes the need for close cooperation between State and Federal conservation agencies and the people who hunt and fish—to bring about a restoration of our renewable resources. The Editor gratefully receives for publication news items, articles, and photographs dealing with the North Carolina out-of-doors, but reserves the right to reject materials submitted. Full credit is given for all materials published.

* * *

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* * *

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Wildlife IN NORTH CAROLINA

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APRIL, 1965 VOL. XXIX, NO. 4

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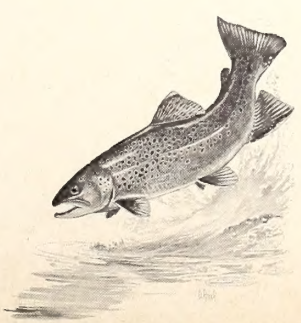
DUANE RAVER _ _ _ _ MANAGING EDITOR
JOEL ARRINGTON _ WRITER-PHOTOGRAPHER
LUTHER PARTIN _ _ WRITER-PHOTOGRAPHER
JOHN PARKER _ _ _ _ OUTDOOR SAFETY

The brown trout on this month's cover has looked forward to the opening of the Tarheel trout fishing season (7 a.m., April 3), but for a slightly different reason than most of us. So far, this one has retained its freedom. Coloration of the brown ranges from dark chocolate to burnt orange. The spots usually have light borders and are seldom present on the tail. Painting by Duane Raver.



Boating Accidents, 1964

EVINRUDE MOTORS

by John R. Parker

THE state Boating Act of 1959 requires that all boating accidents occurring on public waters and fitting the reporting criteria of the act be reported to the Wildlife Resources Commission. Those accidents reported to the Commission in 1964 are the subject for consideration here, but perhaps some back-ground information would be of interest.

Prior to the above mentioned act, accidents which occurred on waters of the state declared navigable by the U. S. Coast Guard and which: (1) resulted in death or (2) which incapacitated a person for more than 72 hours or (3) which involved more than $100 in property damage, were required to be reported to the Coast Guard. The State Boating Act which basically followed the guidelines of a model Federal act, retained the above reporting criteria but required that accidents be reported to the Wildlife Commission.

It should be pointed out that a boat does not have to be motor driven or registered to come under the accident reporting part of the law. In other words, *all* boating accidents occurring on public waters and covered by one or more of the above mentioned criteria must be reported within 10 days of the occurrence. For example, if a Green River canoeing accident on June 1 caused $110 damage to a $250 canoe, then this accident falls well within the type to be reported. This accident must be reported to the Commission in triplicate by June 11 on the Boating Accident Report form obtainable from the Commission or from a wildlife protector. The form should be filled out completely.

This act, the Boat Safety Act, as you may recall, also requires certain safety equipment aboard, motorboat registration and a subsequent expansion of the boating safety education program.

The Wildlife Commission and the Coast Guard cooperate in acquiring information pertaining to boating accidents. While both agencies are generally interested in all boating accidents, the Coast Guard has the responsibility of recording and analyzing those occurring on navigable waters and the Commission has the responsibility to do likewise with accidents occurring on public waters, including navigable waters.

The private waters fatality total is comparable to the public water fatality total. Therefore, it will serve to clarify the 1964 boating accident report if we reemphasize that accidents occurring on most farm ponds and the like are not included in the following discussions. This does not mean, however, that the farm pond accident is a neglected area. Organizations such as local rescue squadrons, local Red Cross Chapters and the North Carolina Rural Safety Council are in close touch with private water accidents.

Since boaters are wanderers at heart, the pond fisherman may spend a weekend of boating on the coast and vice versa. The point here is that no group is prevented from utilizing safety information released by the Commission, the Coast Guard, the Auxiliary, the Power Squadrons, the Red Cross, etc. On the contrary, it is hoped that all boaters will eventually benefit from that information.

Safe boating is safe boating wherever you find it. And wherever one finds it, the rules are basically the same. What is not the same is the extent to which an individual rule should be applied. This will vary between the

mill stream and the gulf stream.

To what extent were safe boating rules applied last year? Taking in consideration the big picture and the total number of boaters (see the Skipper, page 18) the rules were followed fairly well. However, considering that 44 persons lost their lives on North Carolina waters last year, we can see room for improvement.

In any set of accident statistics, the figure involving death or injury are of prime concern. Secondary are those involving property damage, how the accidents happened, etc. There are dozens of entries on the reporting form and from these, hundreds of comparisons and conclusions could be made. Such conclusions may or may not be entirely accurate. We have included what was considered to be useful information to the boater in the accompanying graphs, map and brief discussion that follows.

The most important figure has already been mentioned. The total of 44 deaths of last year, most due to drowning, was somewhat higher than 1963. We might assume that the rash of spring accidents involving death by exposure and drowning ran the figure up. We can hope and work for a safer season in 1965, but only the months immediately ahead will tell if the total will exceed 88—the total number of accidents reported in 1964.

The number of personal injuries was recorded at 23. The list included burns due to fire aboard, severe cuts and bruises as a result of the boater falling overboard and under the boat in which he was riding, or a swimmer being hit by a boat, bruises and cuts due to falling within the boat or being thrown against a windshield. One boater even sustained an injured arm which was struck against a marker while the boat was in operation. That's cutting it a little too close. There are others and each carries a message of pain and doctor bills, all of which might have been prevented.

The age of the boater involved is always an interesting subject. The teenager is usually suspected. Seventeen of the 88 accidents involved teenagers. This is not very incriminating. It might even be called a plus for the teenager. Of course, what we don't know is the total number of teenagers boating as compared to the total number of boaters. Also in the age entry on the accident reporting form we find the age range, from 13 to 71 years old.

How much experience did the boat operator have? About a third claimed they had over 500 hours! This indicates, for one thing, that we are never too old to learn or that "skipper certificates" do not make one immune to the boating accident. The remainder of the operators claimed the following experience: 11 had less than 20 hours, 14 had 20 to 100 hours and 24 had 100-500 hours experience.

Most of the accidents happened during various hours throughout the day with only a few at night. The night accidents could be attributed to just that: running at night usually without running or search lights.

Eighty-three percent of the accidents occurred in clear weather, 80 percent during periods of good visibility and 56 percent when seas were calm. From this we might safely conclude that weather is a contributing factor in less than half of the accidents. Nevertheless, there were several accidents with sea conditions given as the direct cause. These were usually accidents that occurred around inlets, or on large windswept lakes. And too often, the boat was a bit small for existing conditions.

Most often—63 times out of the total of 88—the boat involved was an open motorboat and 61 times out of the 88 the power was outboard. There were nine cabin motorboats involved and we might point out here that there were nine inboard gasoline engines in the power entry and two inboard diesels. Others included four sailboats, 11 classified as rowboats, and three listed under "others."

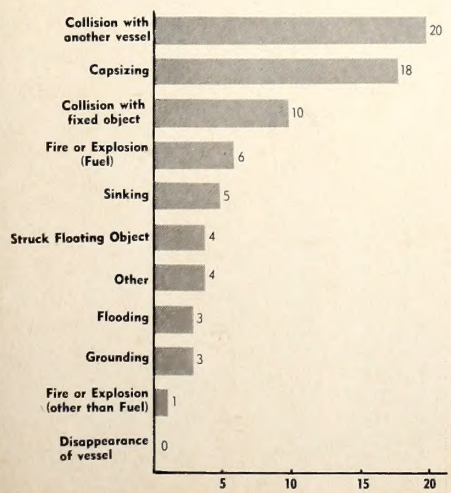
As one might suspect, the boats were usually of wooden construction—55 out of the 88. Six were listed as being made of aluminum and 27 of fiberglass.

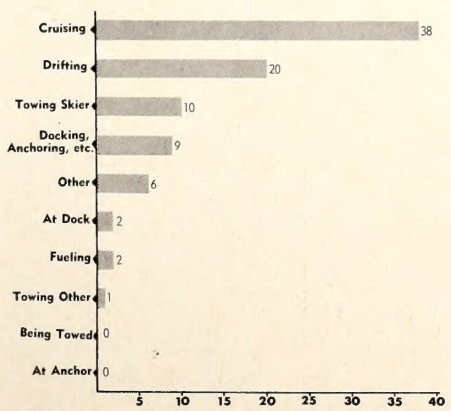
The boats varied in length from 8 to 46 feet but quite often the boat involved was a 14 to 16-foot runabout of which North Carolina has its share. (see Skipper page 18).

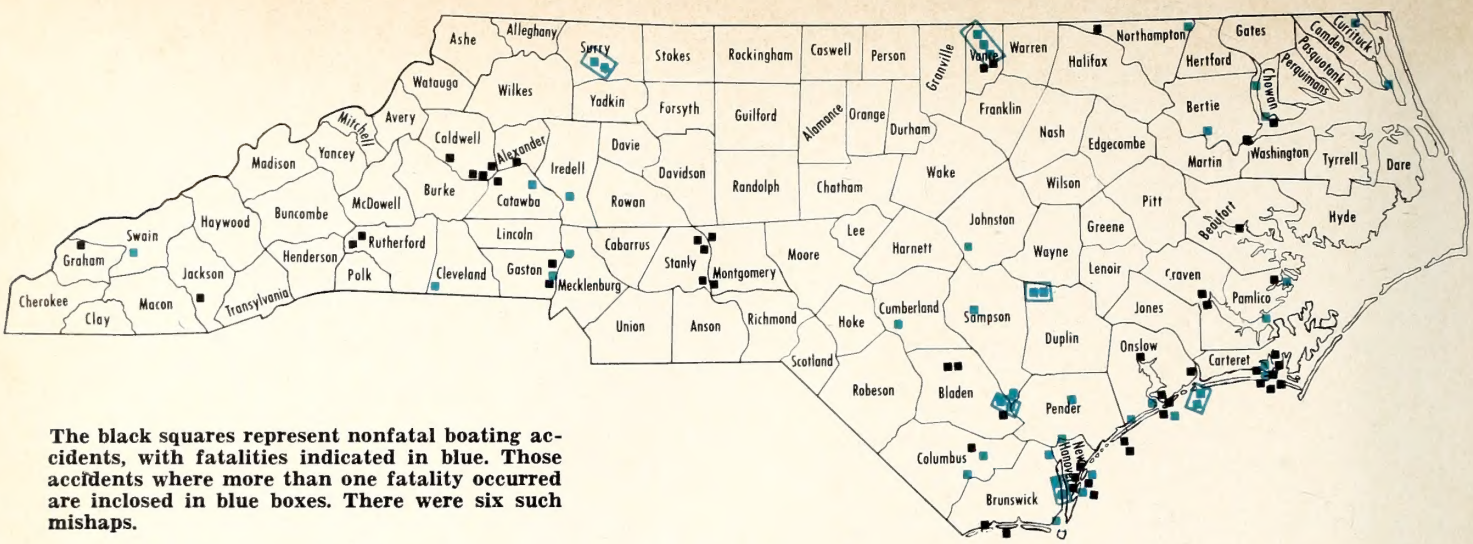
Seventy percent of the time there was more than one person aboard which indicates that boaters like company but also may indicate that both operator and passengers were not interested in precisely where the boat was going (see "Type of Accident" graph). We might also conclude that perhaps in most cases it is not safe to boat alone.

How much money was involved in this 1964 boating accident damage picture? If we include damage to all vessels and accessory equipment, the total is just over $90,000. The figure not

(Left) Over half of the accidents for which causes were determined, fell in the top two categories. Cruising rated high as activity at the time of accident.







The black squares represent nonfatal boating accidents, with fatalities indicated in blue. Those accidents where more than one fatality occurred are inclosed in blue boxes. There were six such mishaps.

included on boating accident reports is that of doctor bills, loss of work time and of course final expense in the case of fatalities.

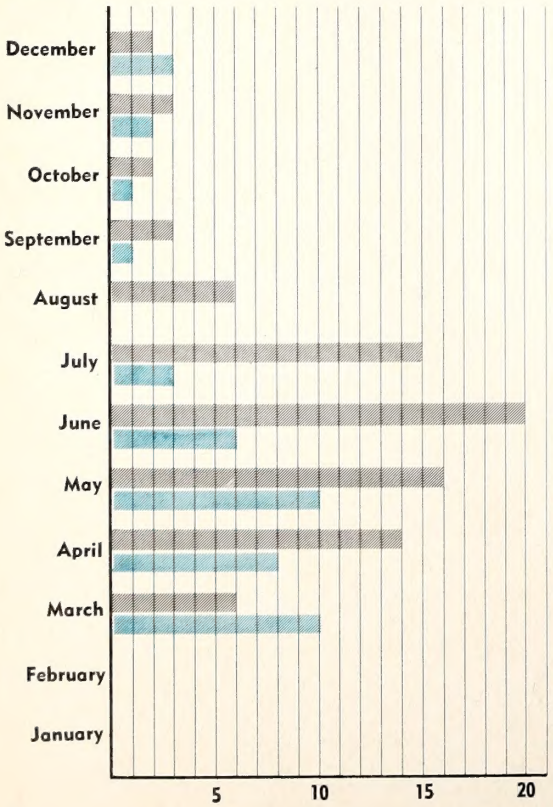
What have we learned from the boating accidents of last season? We know that the casualty number varies from year to year and that there appears as yet no true pattern. The totals are not astronomical or unbelievable but nevertheless exist and must be treated thusly. Most boaters would probably agree that practically all of the accidents could have been prevented. One thing that seems sure, if all 44 of the fatality victims had been wearing life jackets, a large percentage of them would be alive today.

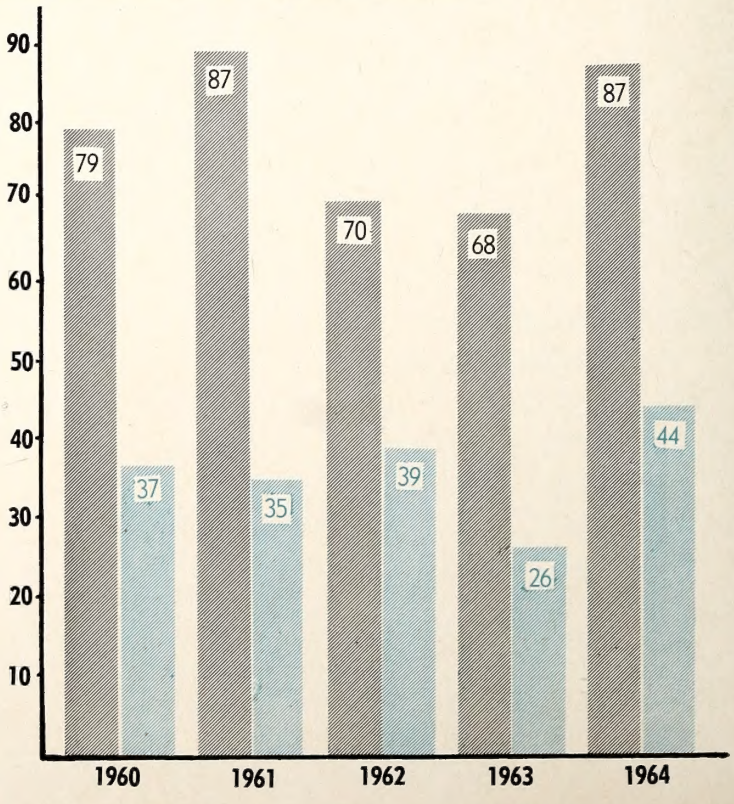
Death by exposure is something else and will always be a threat to the cold water boater. It's a situation that calls for even more caution.

One outstanding thing about many of the accident reports is the reluctance of a person involved to truly accept the responsibility for the accident. A hypothetical example which will cover a varied array of situations is this: when asked why he thought a passenger drowned, the boat operator might answer because "he fell overboard" and not that "he was not wearing a life preserver." In other words, the accident was someone else's fault.

On January 1 of this year a boating accident took the life of a North Carolinian. The final picture on December 31 of this year will depend to a great extent on how the boaters of North Carolina feel about the "hypothetical man" who fell overboard.

The graph at left shows that March and May were high in fatalities (blue bars) for the year, but that June was ahead in the number of nonfatal accidents (gray bars). The ratio of deaths to accidents was lowest during summer. Below, accidents and deaths are compared annually.





The Corn Snake

JOEL ARRINGTON

by William M. Palmer and Franklin F. Snelson, Jr.
N. C. State Museum of Natural History

A member of the well-known Rat Snake Family, the corn snake, *Elaphe guttata guttata,* is considered by many to be the most beautiful serpent in North America. Coloration is variable in this species, ranging from a combination of yellow, orange, and rufous in examples from the coastal plain to grey, tan, and deep mahogany brown in the piedmont and mountains. The pattern, however, is always consistent and readily distinguishes this species from all others occurring in the State.

The dorsal pattern of the corn snake consists of a series of large, squarish blotches which are usually reddish-brown and outlined with black. The belly pattern is most conspicuous and reminiscent of a black and white checkerboard. Important as a distinguishing character of this snake are two golden brown stripes which meet between the eyes in the semblance of a spear point. The adult corn snake may reach a maximum length of five and one half feet, although specimens approaching such dimensions are rare.

Because of similarities in pattern, the corn snake is often confused with two other non-poisonous North Carolina snakes—the mole snake and the young of the rat snake. Both of these species, however, lack the characteristic spear point between the eyes. Because of similarity in coloration, the corn snake is also sometimes confused with the copperhead, which is readily recognizable by the hourglass markings on the body and the triangular shape of the head.

The corn snake is found from the pine barrens of New Jersey southward to Florida, westward to Louisiana, and northward in the Mississippi Valley into Missouri. It ranges throughout North Carolina, being most abundant in the coastal plain. The specific habitat in which it may be found is quite variable, ranging from pine flatwoods on the coast to rocky hillsides and abandoned woodlots in the mountains. Several recently hatched young were even found in the basement of a metropolitan North Carolina hospital!

This species is most often active at night, especially during the hot summer months. Most specimens on record at the North Carolina State Museum of Natural History were taken at night, usually as they were crossing roads. During the day they seek shelter in old rodent burrows and stump holes or under rotting logs and other debris.

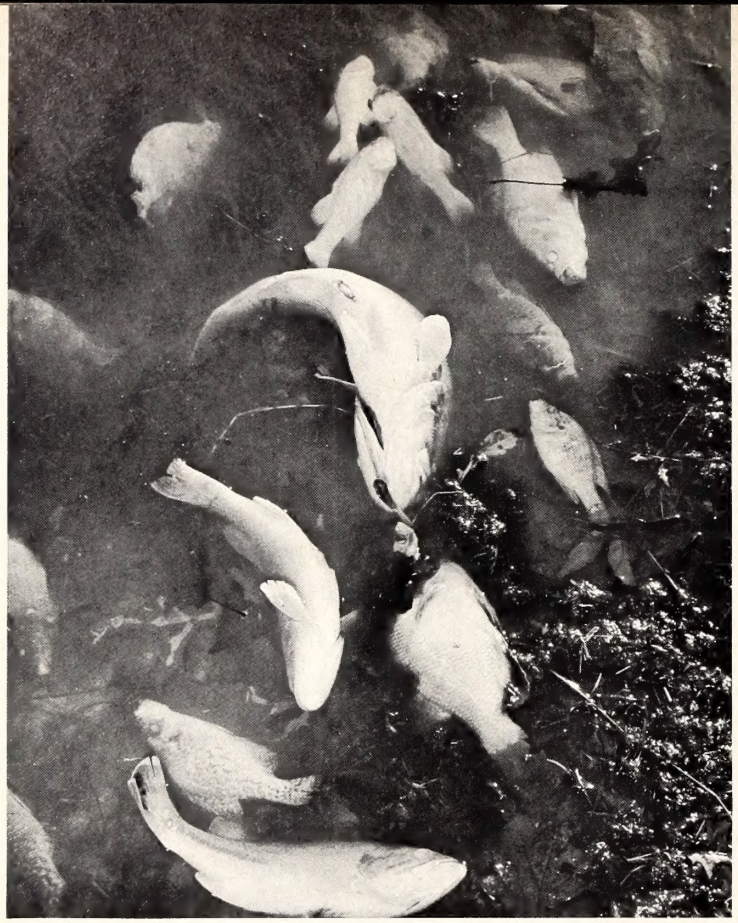
The corn snake is an efficient constrictor. It does not kill its prey by crushing it to death as is sometimes believed. Contrarily, its tight coils around the victim's body hinder respiratory movements and ultimately cause suffocation. Rodents are the chief food item of this serpent. The name "corn snake" evolved from the fact that this species is often abundant about fields of corn and other grain where it is of great significance in controlling the number of rats and mice which feast on these crops. Being an agile climber, it may occasionally eat eggs and young of tree-nesting birds. Young specimens include frogs and lizards in their diet. In captivity, this species shows a decided preference for rodents and eats white mice quite readily.

The corn snake breeds in the early spring. It is oviparous, laying from six to twenty-four white, leathery eggs. These eggs are laid in late June or July under rotting logs or other loose debris. In the coastal plain, they quite commonly deposit their eggs in or around abandoned sawdust piles. The eggs hatch in August or September, the newly hatched snakes being approximately thirteen to fourteen inches long.

Nowhere will the student of nature find a more delightful subject than the corn snake. After a brief period in captivity, it becomes quite docile and is easily handled. This gentle disposition combined with its brilliant colors have made the corn snake a perennial favorite for use in school nature exhibits and as a pet. This snake has been a major force in helping to erase much of the fear, hatred, and superstition so characteristic of the attitudes with which older generations regarded snakes.

And so, as is the case with many other snakes, the beneficial corn snake is unjustly persecuted. In addition to being an important factor in rodent control, this snake's beautiful colors, interesting habits, and mild manners have made it the object of attention of both scientists and nature lovers. The corn snake is truly one of the most valuable of all harmless snakes.

NEXT MONTH:
EASTERN KINGSNAKE



JOEL ARRINGTON

Insecticides and Fishes

by Dr. F. Eugene Hester
*N. C. Cooperative Sport Fishery Unit

During the past summer this Unit Leader examined 15 farm ponds for possible use in research studies. One pond with several acres of tobacco in the watershed was found to be totally devoid of fishes and another pond contained no bass. When these findings were discussed, the pond owners told of how insecticides had washed into the ponds and killed the fish. The problem is obvious. The solution to it is not the elimination of insecticides, but rather, how to minimize the danger from their use. These observations and related problems have prompted this article.

In the past twenty years a large number of very toxic chemicals have been used as agricultural insecticides, herbicides, and other economic poisons.

These chemicals have become very valuable to farmers in their war against agricultural pests.

With the widespread use of insecticides has come the need for a thorough understanding of the effect these chemicals have on other plants and animals. Many experiments have been conducted to help us understand the effects of insecticides on our fish and game. Most of our knowledge about the toxicity of these chemicals has been obtained by scientists, and the results of their experiments are often expressed in terms which may be difficult for the average person to interpret. Such terms as parts per million (p.p.m.) and Median tolerance limit (M.t.l.) may not be meaningful until we translate them into more common terms.

When insecticides and other harmful chemicals are placed in water, the aquatic animals must live in this mixture or solution. They do not receive a specific dose such as might be received by a vaccination or a pill, but rather, they obtain whatever amount they remove from water. For this reason, the strength of the mixture of solution becomes very important, and the expression "parts per million" is a measure of quantity of material per million such quantities of water —such as pounds of insecticide per million pounds of water.

To further understand this, it might be helpful to realize that a one-acre pond (size of a football field) three feet deep contains about eight million pounds of water. Thus eight pounds of a chemical uniformly mixed in this amount of water will provide a concentration of one part per million. Many, many insecticides will kill fish at this concentration and some insecticides will kill them when only one one-thousandth this strong. Some of them are so poisonous that one teaspoonful of the material can kill fish in the pond we have described above.

Many experiments have been conducted by state and federal agencies to ascertain the toxic level of each insecticide[1,2]. In these experiments many factors must be taken into consideration in addition to the type of chemical and the concentration tested. Temperature and other characteristics of the water must be considered.

Another important consideration in toxicity tests is the length of time the fish are exposed to the chemical. For that reason, most experiments are conducted for a specified period of time, such as 96 hours, and the results are evaluated at the end of that time. Some extremely weak concentrations kill fish when they are exposed for long periods of time; stronger concentrations kill more quickly. Also, some chemicals remain toxic for long peri-

**The N. C. Cooperative Sport Fishery Unit is a recently-established program for the training of graduate students in fisheries. It is sponsored jointly by the Bureau of Sport Fisheries and Wildlife of the U. S. Fish and Wildlife Service and North Carolina State of the University of North Carolina at Raleigh.*

ods of time and are as objectionable because of their persistence as for their original toxicity.

Some chemicals are more toxic to fish than others. Although direct comparisons between various insecticides are difficult to make because of the many factors involved, the following general rating may be of some benefit[3]:

Most Toxic				*Least Toxic*
Endrin	EPN	Guthion	TDE	Sevin
Toxaphene	Aldrin	Parathion	Malathion	Dipterex
Dieldrin	DDT	Systox		
Thiodan	Heptachlor	BHC		
	Lindane	Methyl parathion		
	Chlordane			
	Methoxychlor			

Some species of fish are more resistant than other species to individual poisons. This differential resistance sometimes results in kills of which certain species are affected less severely.

Individual fish within a species also vary greatly in their resistance to a specific chemical. Some fish may be killed by very dilute concentrations, and other individuals may survive much stronger concentrations of the same chemical.

Insecticides may have both immediate and long-range effects. The immediate ones are sometimes obvious and easily understood. For example, when a rainstorm washes highly toxic endrin or toxaphene from a cotton field into a farm pond, the loss of fish may be both dramatic and easily understood. Here the results are immediate and the cause may be obvious.

The long-range effects of insecticides are much more difficult to detect and to analyze. Some insecticides may affect fish in a very indirect way, such as by killing the aquatic insects and other organisms upon which the fish feed. Also, some toxic materials can accumulate in an animal's body over long periods of time and lethal limits can be reached.

Other effects may be obtained before a lethal level is reached. In recent years it has been determined that some insecticides can accumulate in body tissues, especially oils. When stored in developing eggs during their formation, some materials can cause subsequent death of the developing young[4].

Because insecticides possess such a great potential hazard to aquatic life, we must learn to use them as safely as possible. It is well to remember that prevention is the only cure—that is, there is no practical way to neutralize the poison after it has been added to the water.

Farm ponds frequently receive considerable amounts of insecticides, some of which could be reduced or eliminated by following these simple precautions[3].

1. Sprays are preferred over dusts since drift is more easily controlled under all conditions.

2. Ground machinery is preferred over the airplane since drift is more easily controlled with ground equipment.

3. A grassy sod of at least 50 feet should be maintained around the ponds to reduce rapid erosion into the ponds.

4. Ditches and channels should not be allowed to directly enter the ponds. Instead, the slope towards the pond should be as uniform as possible.

5. Insecticides should be stored in areas that drain away from the pond. Filling, mixing, repairing, and emptying of sprayers and dusters should be done in areas which will not drain into the pond. If drainage must be towards the pond, the greatest distance possible from the pond should be selected for such operations.

6. Empty insecticide containers should be left in storage and disposed of from time to time, preferably by burying in disposal dumps.

7. All spray and dust machinery should be equipped with positive cut-offs, and there should be no leaks in any part of the equipment. All tanks or hoppers should have tight-fitting covers.

8. The actual operator should be alert to the dangers involved (wind drift, spillage, and rapid run-off soon after treating) and should exercise good judgment at all times.

Any addition to public waters of toxic materials, whether industrial, domestic, or agricultural in origin, should be of vital concern to every citizen. Although our wastes may appear to be gone when they have washed away, it is well to remember that they may have become an important part of the aquatic community.

1. Tarzwell, Clarence M. 1959. The toxicity of some organic insecticides to fishes. Proceedings of the Twelfth Annual Conference of the Southeastern Association of Game and Fish Commissioners. pp. 233-239.

2. Henderson, C., Q. H. Pickering and C. M. Tarzwell. 1959. Relative toxicity of ten chlorinated hydrocarbon insecticides to four species of fish. Transactions of the American Fisheries Society. 88(1): 23-32.

3. Mistric, Walter J., Frank E. Guthrie, and F. Eugene Hester. 1960. Insecticide Usage Around Farm Ponds. Entomology and Zoology Information Note No. 125, North Carolina State College.

4. Burdick, G. E., E. J. Harris, H. J. Dean, T. M. Walker, Jack Shea, and David Colby. 1964. The accumulation of DDT in lake trout and the effect on reproduction. Transactions of the American Fisheries Society 93(2):127-136.

VISUAL AIDS–N. C. STATE COLLEGE

Some Problems in Wild Turkey Management in North Carolina Part 2

What about turkey hunting laws? Why not stock "wild" turkeys? Is disease a serious problem?

by Sam Gooden
Wildlife Biologist

GAME laws are made to preserve the various species of game. They also are made to give everyone an equal opportunity to enjoy the sport of hunting. Our traditional laws on wild turkeys give a very liberal season (87 days during the 1964-65 season), with a daily bag limit of one and a season limit of two.

Some turkey hunters consider hunting a major factor in holding down wild turkey populations in North Carolina. However, many sportsmen and wildlife protectors believe that the illegal kill is as large or larger than the legal kill. Illegal hunting of turkeys may be divided into two types—hunting out of season and hunting illegally in season. The opening of the squirrel season prior to the turkey season attracts many hunters to the woods where they have opportunities to kill turkeys before the opening of the turkey season.

In addition to the alleged illegal kill, this has been criticized by the turkey hunters because the turkey flocks at the beginning of the turkey season are much wilder and often are scattered as a result of the disturbance of squirrel hunting. But if the squirrel population is adequate for a long season, is it fair to penalize the squirrel hunters because some hunters use the squirrel season as a pretext for being in the woods where they kill turkeys or other game out of season?

The biggest problems with illegal turkey hunting during the season probably are those of exceeding the season limit and killing hens. With a long season and without regulations requiring turkeys to be checked at checking stations or in some other manner, the season bag limit is unenforceable. Reports are heard too frequently of experienced turkey hunters killing from 6 to 12 or more turkeys in a season.

Most experienced turkey hunters claim they usually are unable to distinguish gobblers from hens when the birds are flushed. During most of the season young gobblers seldom have beards of sufficient length to be seen. Gobblers can be distinguished by other characteristics, especially by the black breast feathers. However, these characteristics usually are impossible to see when turkeys are flushed and are difficult to see even when turkeys are on the ground except in good light. Some experienced turkey hunters believe that as many hens are being killed as would be if there were no restriction on the sex. If this is true, is this an unnecessary and ineffective restriction on the turkey hunter?

Every week of a wild turkey's life presents dangers and hazards. These chicks will be lucky to survive their second week.

Although the number of counties open to turkey hunting has been decreased in recent years, 60 counties were open during the 1964-65 season. Of these, an estimated 25 to 30 counties either had no turkeys or so few that hunting was very limited and the turkey populations were endangered.

Some changes in our game laws on wild turkeys may be needed. However, it will take more than adjustments in the game laws to substantially reduce the illegal kill. The solution to the problem of illegal hunting of turkeys is not easy. It is tied in with the pattern of illegal hunting of other game species and with the attitude of the public toward the game laws. The protection and education phases of the Wildlife Resources Commission's program are excellent and are resulting in progress. However, this problem can be solved only through the realization by large numbers of sportsmen that the game laws are for their benefit and protection and that the illegal hunter is stealing from them; and then only by strong action by an aroused citizenry resulting in reform and improvement.

Some sportsmen still have the misconception that all of the problems of game management can be solved by raising the game in captivity and releasing these half-wild animals. This misconception has been particularly persistent in the field of wild turkey management. There are two sources of turkeys for stocking—turkeys trapped in the wild and turkeys raised in captivity. The Wildlife Resources Commission stocks only the former. Some clubs and individuals continue to release pen-raised "wild" turkeys with little regard to whether they are doing any good or even may be doing some harm.

If native wild turkeys (unpolluted with domestic turkey blood) are present in an area but fail to do well, there is some reason for it. It may be because of poor habitat, too much hunting, disease, or some other reason. The stocking of pen-raised turkeys, without remedying the cause or causes of the failure of the native turkeys, will only help temporarily and may do much harm. In areas having adequate protection and good range but completely devoid of birds, as few as 6 to 12 native wild turkeys may be sufficient for brood stock.

There are two main dangers in stocking pen-raised turkeys in range where native wild turkeys are present. First, if the pen-raised turkeys are inferior to the native turkeys because of tameness or some domestic turkey blood. Pure wild turkeys can be raised in pens only on a small scale with special care and, therefore, are expensive. In order to have much chance of survival in the wild, they must be raised in large "conditioning pens," isolated from human activity, and where they will learn to roost in trees, find food among the leaves and vegetation, develop their muscles with plenty of exercise, and learn to cope with the hazards of the wild. Even turkeys raised from pure wild turkey eggs in the best "conditioning pens" will not be as wild as if they had been raised in the wild by the wild turkey hen.

The second danger in stocking pen-raised turkeys in range where native wild turkeys are present is that of introducing diseases into the native turkeys.

This leg-banded gobbler is from pure wild stock and will be released in an area that has the characteristics of turkey habitat.

JOEL ARRINGTON

Wild turkeys are suceptible to many diseases that are common in domestic poultry. Many poultry disease organisms can live in an inactive state in the soil for several years. Once some diseases occur in a pen, the danger of reinfecting new birds will persist for several years. Some turkeys may have diseases but show no symptoms because the diseases are suppressed by antibiotics administered in feed or drinking water. When these turkey are released in the wild and no longer receive medicine, they serve as carriers of the diseases until they die. Some turkeys may recover completely from diseases but continue to be carriers of the diseases.

It should be emphasized that where pure wild turkey stock is not available, the release of pen-raised turkeys to establish a population in an area completely devoid of native turkeys may be justifiable. In this situation there is much to gain and little to lose except the cost of the turkeys. The outcome of such releases will depend on the vigor and wildness of the turkeys, and on the habitat, protection, and other factors in the release area. It is impossible in this article to adequately discuss all aspects of the problem of releasing pen-raised turkeys. Copies of a more complete article on this subject may be obtained from the author.

Sportsmen who have some wild turkeys present in their hunting area but want more, should consider the possibilities of improving the habitat and strengthening protection from illegal hunting. Stocking of pen-raised turkeys is not the solution.

ANOTHER threat to wild turkeys in some areas is the use of poultry manure to fertilize fields. The organisms causing many deadly poultry diseases such as blackhead and some types of coccidiosis and enteritis, are transmitted through the droppings and can remain alive in an inactive state in the soil or poultry manure for several years. The wild turkeys have only to ingest these organisms while feeding to contract the diseases. The use of poultry manure to fertilize fields creates a concentrated source of disease organisms. In turkey range extreme caution should be exercised not to use poultry manure in any fields which might be used by wild turkeys. The dumping of dead poultry where wild turkeys may range is another possible means of transmission of diseases to wild turkeys. Because the wild turkey is very wary, shy, and secretive it usually does not come into contact with domestic poultry operations. Therefore, the danger of transmission of poultry diseases to wild turkeys usually is not great except in the ways discussed above.

There is some indication that insecticides may be a serious problem in management of wild turkeys in some parts of North Carolina. It has been demonstrated that many insecticides, particularly the newer and more deadly ones, kill quail, song birds, small rodents, fish and many other animals at the rates that they are commonly applied. While no studies have been made of the effect of insecticides on wild turkeys, it is reasonable to believe that they are as susceptible to poisoning as other wildlife.

There is some reason to suspect that tobacco fields in wild turkey range may constitute a hazard to wild turkey populations. Many of the newer and more deadly insecticides, such as endrin and dieldrin, are being used extensively on tobacco. Aerial spraying of tobacco has become common. This distributes the insecticides over a much larger area and sometimes at a much less uniform rate than hand spraying. The tobacco hornworm is a highly sought food of both young and adult turkeys. Turkeys will walk up and down the tobacco rows searching for these insect larvae. Grasshoppers, which also are a destructive pest of tobacco, are a preferred food of wild turkeys. Generally, more deadly insecticides are being applied in larger quantities and are being scattered over a larger area in and around tobacco fields, and the feeding habits of wild turkeys bring them into repeated contact with the insecticides. It is suspected that this situation may have contributed to the decrease in the turkey population on the the Caswell Wildlife Management area and plans are being made to study this problem.

WEATHER probably is the most important natural factor affecting populations of ground nesting birds. Extremely heavy rain, especially when combined with cold weather, may cause setting turkey hens to desert their nests or may cause young poults to die from exposure or disease. Nests located in low areas may be flooded. The effects of adverse weather on nesting and survival of young, in addition to nest desertions caused by disturbances, holds the reproductive rate considerably below what would be expected for a bird which lays an average of 12 to 13 eggs per clutch. In contrast to quail, the wild turkey has a very low rate of renesting following failure of the first nesting attempt.

Adverse weather can not be controlled. It frequently causes violent fluctuations in local populations of turkeys and other game birds. Scarcity of game caused by weather is not commonly recognized by sportsmen and sometimes results in demands for measures which have been proven to be impractical such as stocking pen-raised game and predator control. Where the cause of low populations of game birds is adverse weather during the nesting season, these measures are a waste of money.

In summary, there are many factors other than deficiencies in range or habitat which have adverse effects on wild turkey populations. Among the more important ones are illegal hunting, diseases, insecticides, weather, and even restocking with pen-raised birds. None of these factors is easily corrected; but we can make a good start by understanding them and working together.

NORTH CAROLINA WILDLIFE

RESOURCE-O-GRAM

A ROUNDUP OF THE LATEST WILDLIFE NEWS

Mountain Trout Season Set For April 3

Tarheel trout anglers who have been waiting for more action since last fall will be out in full force April 3 to open the 1965 mountain trout fishing season. Almost 2,000 miles of designated public mountain trout fishing streams will have been stocked with some 200,000 keeping-size brook, rainbow and brown trout prior to opening day. If weather is agreeable about 25 per cent of this year's trout fishing will have been accomplished on this date, the rest will be spread over a season ending September 7. Special regulations apply to Western N. C. wildlife management areas, and copies of these are available from the Wildlife Resources Commission, Box 2919, Raleigh 27602.

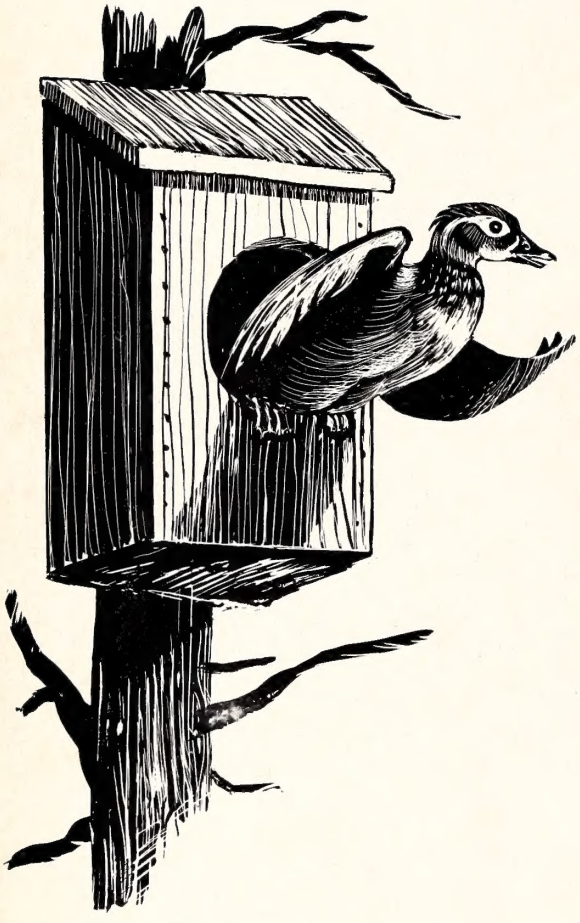
Be Sure to Have Fishing License, Boat Registration Certificate

Although fishing is a year-around activity in much of Tarheelia, major fresh water fishing gets under way in April. The Wildlife Resources Commission urges anglers to get out their billfolds to make sure they are in possession of a valid 1965 fishing license or a combination hunting and fishing license that is valid until July 31 this year. Meanwhile, boating activity begins in April, and the Commission advises operators of boats powered by machinery of more than ten horsepower to have their craft duly registered and properly equipped with appropriate safety devices such as life preservers, lights for night operation, and fire extinguishers if required.

Striped Bass Hatchery Being Readied

The world's first striped bass hatchery at Weldon is being readied for the annual spring spawning run of stripers and will be in operation soon after April 15. Anglers who take stripers on hook and line or with nets are urged to bring spawn-ripe fish to the hatchery where their eggs can be fertilized and hatched. The Wildlife Resources Commission pays $20.00 per million for viable eggs brought in to the hatchery.

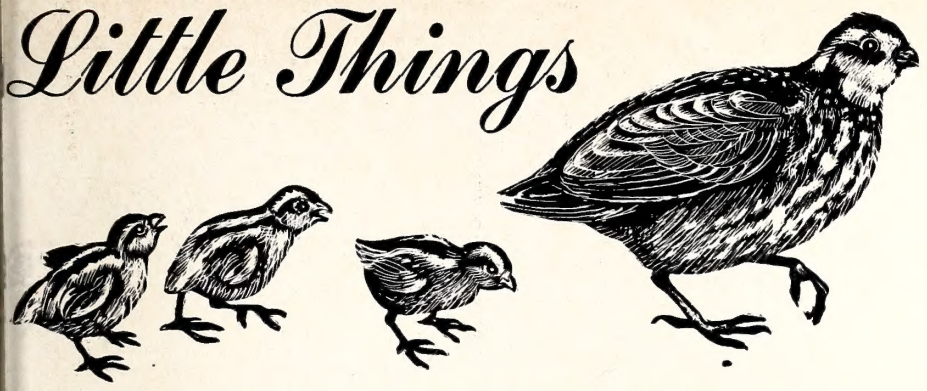
Spring Brings Th



The magic of spring certainly extends
wildlife as Nature awakens after a re
cold weather. Any day now, early-nest
and perhaps by late April the bobwhit
thicket and quail chicks will soon foll
A place to live for any wildlife specie
must include a suatable area to rear t
disturbed. Some birds will nest a secon
first nest is destroyed, but once the yo
then are killed, the year's crop is gon
out a hollow tree cavity near a seclu
will serve just as well provided that it
woodie's liking. Many wild things, like
stake off a territory during the spring
staunchly. Young cottontails stay in
the furlined nest only a few days and
then venture out into the new, wide w
coloration and lack of scent help kee
born fawn safe. Yet many are victims
running dog packs. Nature does its be
to protect the new crop of young, but
we can help by keeping pets under
control during the spring months.
Leave young wildlife alone.

It won't be long until wi

Little Things



the world of
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song birds will be seeking nesting sites
ill have established a home in a grassy

young in peace and without being
nd even a third time if their
birds hatch and
he wood duck seeks
pond. A man-made nesting box
over water and to the
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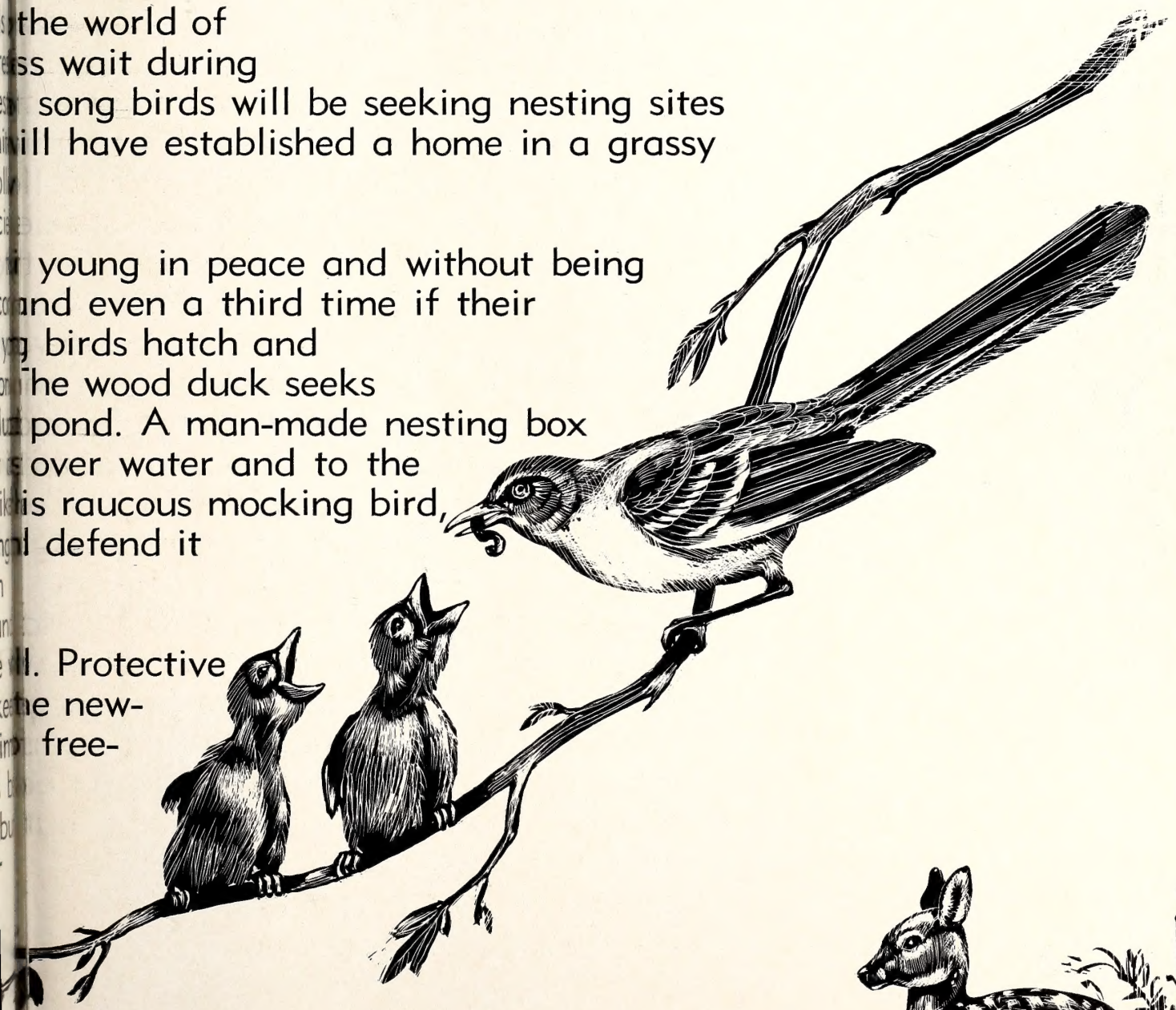


e's new crop will be here.

Shad On the Move: Cape Fear River

by James R. Davis*
and Paul R. Nichols†

ONE has only to see the excitement along the Tar River at Rocky Mount during the annual shad derby beginning April 11, or to see the crowded shores and bridges on the Connecticut River in April-May, to realize that fishing for American shad, *Alosa* (Latin for shad) *sapidissima* ("most palatable"), is rapidly developing into an important recreational activity along the Atlantic seaboard.

Shad strike with rattlesnake tenacity and they can snap an 8-lb. line like a rotten rubber band. When this silver demon is hooked, it will jump, run, sound, and still be battling when led into a landing net. Veteran "shadsters" know that these fast swimmers cannot be "horsed" because their mouths are very soft and will not stand too much drag. Allow the fish to have its own way, reeling slowly and easily, keeping a tight line at each run, and gradually guiding it to the surface near the boat and into the net.

Who is really the daddy of this interesting and novel pastime? Just ask any oldtimer, and he generally claims to be the first to take shad with an artificial lure. Every eastern Carolina community has some fisherman who claims to have originated this pastime, or a close relative who was the first. In reality, it was discovered many, many years ago on the Connecticut River that spawning shad could be enticed to strike a plain hook garnished with colored beads or a piece of red flannel. From this discovery the shad sport fishery developed and has expanded to many rivers—Delaware, Susquehanna, James, Pamlico-Tar, Ogeechee, Edisto, St. Johns, just to mention a few. Last spring, Cape Fear River shad felt the sting of darts and spoons for the first time.

Historically, shad ascended the Cape Fear River to Smiley Falls near Lillington, N. C., about 180 miles from the ocean. However, three present-day dams on this river, located 67, 101, and 124 miles above the mouth, prevent anadromous fish from access to the river above during the spawning season except during periods of extended high flow.

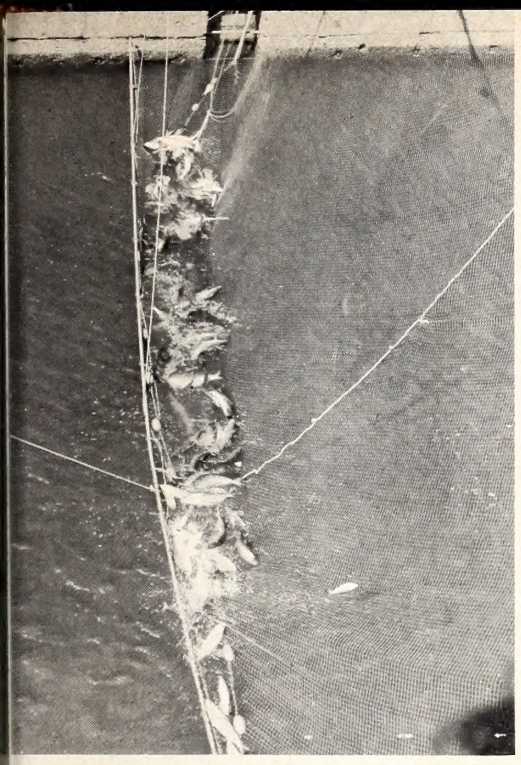
Since 1962 the U. S. Fish and Wildlife Service, Bureau of Commercial Fisheries, the North Carolina Wildlife Resources Commission and the U. S. Army Corps of Engineers (Wilmington District), cooperated in field studies to determine the feasibility of using the navigation locks at each of these dams to pass shad and other anadromous species upstream during their spawning migration. During the course of the investigation many questions were asked by potential shad anglers and interested bystanders. This article answers some of the inquiries and will acquaint the reader with an interesting fish and an exciting sport fishery.

AMERICAN shad occur more or less abundantly along the Atlantic Coast from the Gulf of St. Lawrence in eastern Canada to the St. Johns River in Florida, with their center of greatest availability being from North Carolina to Connecticut. They also are found from southern California to southeastern Alaska

These are American shad. The top fish, a male, is 5 years old and weighed 3.2 pounds. The female, same age, 4 pounds.

BUREAU OF COMMERCIAL FISHERIES

*Fishery Biologist, N. C. Wildlife Resources Commission, Raleigh.
†Bureau of Commercial Fisheries, Beaufort, N. C.



BUREAU OF COMMERCIAL FISHERIES

This is a net full of shad and other fish during periodic sampling of their upstream movement through the locks.

on the Pacific Coast, where they were introduced more than 85 years ago from the Atlantic Coast. Fishery authorities, strangely enough, have attempted to introduce shad into many inland waters in hopes of establishing populations, but have not been successful.

Shad are anadromous, hatching in fresh water, descending to the ocean for most of their nourishment and growth, and returning to the fresh waters to spawn. No one definitely knows by what means shad find their way back to a parent stream, but some piscatorial professors have theorized that odor derived from vegetation and soils might lead them back, or that the young shad may be accustomed to their "home stream's" smell, and thus "remember" the characteristics of their stream as they migrate up or down the coast in preparation for spawning.

The first shad reach the spawning grounds in the Cape Fear River—immediately below the first dam (lock 1) in the main river, from Highway 53 bridge to Tomahawk in the Black River, and from Highway 53 bridge to Tin City in the North East Cape Fear River—about mid-March, and the run usually continues until mid-June. Both males and females reach the spawning grounds in schools. Without any apparent nest building or elaborate courtship, shad release their reproductive cells into the open water. The eggs and young are left to Mother Nature's care.

The young remain in the river until autumn when they make the long journey to the ocean, at which time they are from 3 to 5 inches long.

While in the ocean, shad make many excursions and travel many miles, as far as the coast of Maine, searching for food. After 2 to 5 years of ocean life they reach sexual maturity, and their most important function becomes that of reproduction. Instinctively, they move along the coast, searching out the stream of their birth and moving against the river's current seeking their natural spawning grounds.

During the spawning migration and the stay in the spawning area, adult shad are caught by all forms of apparatus from seines and nets near the coast and lower rivers to sport tackle in the upriver areas.

THE shad is the largest and best known member of the herring family. It is a close relative of the jump-crazy tarpon (*Megalops atlantica*). The shad is a deep-bodied, laterally-compressed, silvery, and sometimes iridescent fish. Its body, with its curious sawedged belly, is relatively large and its fins are small. The female, or "roe" shad, is larger, deeper, and more distended than the male, or "buck" shad. There are no other clear marks distinguishing the bucks from the roes, as in some other fishes during the breeding season. The average weight of Cape Fear River shad is about 2 pounds for buck and 3 pounds for the roe. Some shad in northern rivers are known to go over 10 pounds, but such records are rare.

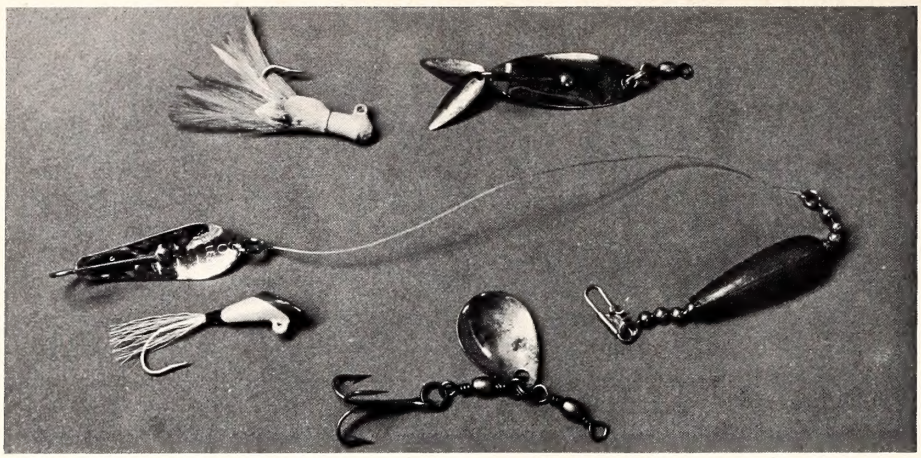
The number of eggs produced by a Cape Fear River shad ranges from 125,000 to 400,000 depending on the size and age of the fish. The fertilized eggs hatch in 3 to 12 days, depending on water temperature—5 days at 63° F.

The young possess teeth with which they are able to eat insects and other small animals and fish. Adults possess no teeth, and they feed largely on tiny microscopic animals called zooplankton which are strained through their many comblike gill-rakers. Shad take little or no food during their spawning migration. Shad that spawn in streams south of Chesapeake Bay, and particularly south of Cape Hatteras, die after spawning. As with many biological questions, the reason is unknown.

Observation of the age distribution by sex of Cape Fear River shad shows that the majority of males are 3 and 4 years old, while the females are 4 and 5 years of age. However, it is not uncommon to find a 2-year-old male or a 6-year-old female. Shad are aged by growth rings (annuli) found on their scales, similar to rings that tell the age of a tree. Still further, when the shad is preparaing to spawn, it gives up eating and ceases to grow. During this period the scale is slightly resorbed, and when growth is resumed after their return to the ocean, as is the case with shad spawning north of Cape Hatteras, it leaves an unmistakable "spawning mark" on the scale.

SHAD are taken by trolling or casting with various types of small metal spoons and weighted jigs. Most casters prefer a single lure, whereas trollers most often use a combination of lures, called a "shad rig", which sometimes results in a double catch. In view of the limited feeding by shad during their spawning migration, when they attack artificial lures, it is more likely a matter of defense of their spawning grounds rather than an offensive for food.

The primary points of shad fishing are to give action to the lure and to keep it as close to the bottom as possible without snagging. Try casting a quarter-ounce shad dart or "triple O" spoon across a submerged bar or at a river bend about a 45-degree angle to the flow of water, reel-



JOEL ARRINGTON

These lures have proven effective on the American shad and its smaller cousin, the hickory. The sinker holds the spoon down.

ing in slowly, allowing the lure to reach near the bottom as it swings with the current, slightly pumping the rod to give action to the lure. Or try trolling the river upstream and downstream with a shad dart and spoon combo, throttling down or revving up to keep the lure just off the bottom, swinging across the current on wide turns. Shad often hit while on the swing. The swing also is noted for getting lines tangles and for snagging bottom.

Shad usually keep banker's hours, with peak angling success from 10:00 a.m. to 5:00 p.m., gradually tapering off until dark, and poor between 8:00 a.m. and 10:00 a.m. Regardless of the hours fished, the factors which seem to influence the catches are water temperature and water levels. Catches are usually good between 53° and 75° F., with best catches made at 68° to 70° F. Reduced catches are associated with high or low water levels.

There are no seasonal restrictions on shad fishing with hook and line in North Carolina rivers. Creel and size limits are unrestricted. A valid fishing license is required when artificial baits are used, or when one is fishing outside his county of residence. The Cape Fear river above lock 1 is closed to net fishing. Shad, as with other living things, are capable of self-perpetuation under adequate protection and favorable conditions.

Found in the Cape Fear River is the hickory shad, *A. mediocris,* another member of the herring family, which is very similar in appearance and habit to the American shad. For some real fast and furious action, hit one of these with a fly rod and small spoon. This species is smaller than the American shad, usually weighing from 1 to 2 pounds, and is identified by its jetblack-tipped lower jaw which protrudes the upper. Some fishermen, who can identify these two fish, claim the roe in the "hicks" is much sweeter and better eating than the roe of the other shad. Also, the blueback or glut herring and the alewife or branch herring are often caught in Cape Fear River and misidentified as young shad. However, they are close relatives only, and when reaching maturity average about three-quarters of a pound in weight. On a fly rod either fish will give you more action than a trout twice its size. The gizzard, or stink shad is very abundant in the Cape Fear River but is practically never known to strike artificial bait.

GETTING back to experimental lockage of shad and related species upstream during their spawning migration, last spring about 950 shad and 4,180 herring were passed above lock 1 during 95 hours the lock operated for fish passage. In the spring of 1963, 2,200 shad, 5,450 herring, and 25 striped bass were passed upstream during 166 hours of operation. Historically, more than 10,000 shad were caught per year by bow nets and drift gill nets, fished from the mouth of the Black River to Smiley Falls. Mr. I. A. Matthews, operator of the fish camp at Highway 141 bridge on the Cape Fear, remembers the shad heydays in this area.

Reestablishment of the runs of shad above locks in the Cape Fear River will support expansion of both sport and commercial fishing. Last spring about 259,200 shad entered the Cape Fear River, of which the commercial fishermen caught an estimated 69,250, or about 27 percent. This catch is not of great enough magnitude, at least at the present time, to adversely affect the population.

There is a "rule of thumb" that the restoration of spawning runs of anadromous fish, particularly shad, above barriers in the river would increase future populations of these fish proportionately to the increased spawning area provided. There are about 70 miles of potential spawning and

Except during periods of extended high flow, the dam at lock number 1 prevents shad from access to the spawning area above.

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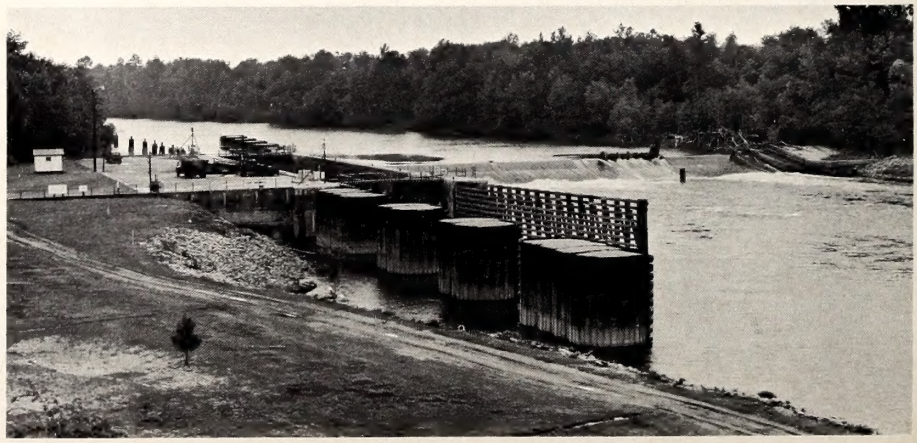


Survival and growth of young shad hatched above lock number 1 is excellent.

nursery habitat above lock 1 in the Cape Fear River—thousands of young shad, about 3 to 4 inches long, leaving the river last October from above lock 1, were a sight to behold.

Many sportsmen thought that fishery biologists had been in the sun too long when told that Cape Fear River shad could be taken on hook and line. The moment of truth came to pass when Mr. Rudolph Inman of Elizabethtown, N. C., hooked five beauties below lock 2 in the spring of 1963. Who knows, he may someday be known as "the daddy of Cape Fear River shad fishing." After Mr. Inman pioneered the way, approximately 177 shad were taken last spring between locks 1 and 3 on sports tackle—the area will be open to sports fishing again this spring.

Man's interest in fish has two major phases—food and sport. In the Cape Fear River the shad can satisfy both. They strike like a smallmouth bass, break water like a rainbow trout, and fight to the last gasp. They are delicious in flavor, especially the roe (eggs) smothered with bacon. These are the attributes that make shad so desirable and worthy of conservation.

HUNTING REGULATIONS

When you buy your hunting license this fall, or your combination hunting-fishing license in August, you will be handed a copy of the 1965-1966 regulations for trapping and for hunting nonmigratory game species. Although all of these regulations may not agree with your opinions or desires you may rest assured that they were not established on the spur of the moment or pulled out of a cocked hat at midnight in the dark of the moon.

The process of establishing these regulations began early this spring when field personnel of the Wildlife Resources Commission made observations on the supply of breeding populations of game throughout the state and evaluated all factors affecting their abundance. In mid-April these men will meet in Raleigh to discuss the relative abundance of game and furbearing species and make an estimate of potential production during the spring and summer months. At this meeting recommendations for seasons and bag limits will be drawn up for presentation to members of the Commission.

On April 28 the Commission will meet in Raleigh to consider recommendations made by field personnel based on the original field observations and then draw up a set of proposals. These proposals will be published immediately and later presented to the general public at a series of nine strategically located public hearings. At these hearings hunters and trappers will be given an opportunity to express their points of view, opinions and desires. These expressions will be recorded for later consideration at another Commission meeting scheduled for mid-June. Meanwhile, the Commission's Raleigh office will receive a great deal of correspondence regarding the proposed regulations, and these expressions, too, will be taken into consideration.

The Wildlife Resources Commission strongly urges you, as a sportsman to attend the public hearing nearest your home, and any or all other hearings that you can. For your convenience we are listing below the times and places of these hearings by district, and the counties included in each district.

District 9
May 18, 1965 Sylva Courthouse 7:30 p.m.
Buncombe, Cherokee, Clay, Graham, Haywood, Henderson, Jackson, Macon, Madison, Polk, Swain, Transsylvania

District 8
May 19, 1965 Morganton Courthouse 7:30 p.m.
Avery, Burke, Caldwell, Catawba, Cleveland, Gaston, Lincoln, McDowell, Mitchell, Rutherford, Yancey

District 7
May 20, 1965 Dobson Courthouse 7:30 p.m.
Alexander, Alleghany, Ashe, Davie, Forsyth, Iredell, Stokes, Surry, Watauga, Wilkes, Yadkin

District 6
May 21, 1965 Albemarle Courthouse 7:30 p.m.
Anson, Cabarrus, Davidson, Mecklenburg, Moore, Montgomery, Richmond, Rowan, Stanly, Union

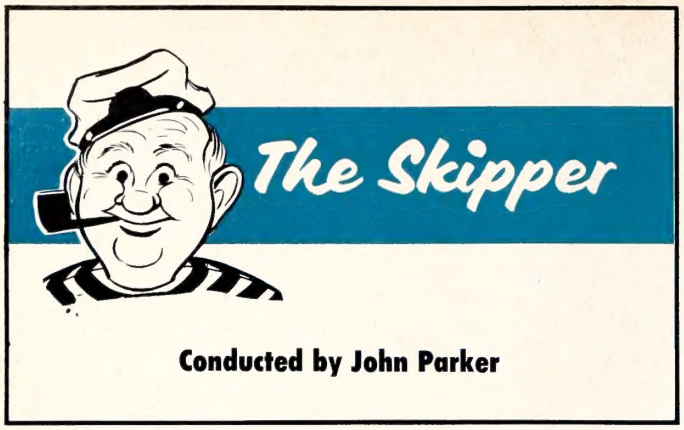
District 5
May 24, 1965 Graham Courthouse 7:30 p.m.
Alamance, Caswell, Chatham, Durham, Granville, Guilford, Lee, Orange, Person, Randolph, Rockingham

District 4
May 25, 1965 Elizabethtown Courthouse 7:30 p.m.
Bladen, Brunswick, Columbus, Cumberland, Harnett, Hoke, New Hanover, Robeson, Sampson, Scotland

District 3
May 26, 1965 Rocky Mount City Court Room 7:30 p.m.
Edgecombe, Franklin, Halifax, Johnston, Nash, Northampton, Vance, Wake, Warren, Wayne, Wilson

District 2
May 27, 1965 New Bern Courthouse 7:30 p.m.
Beaufort, Carteret, Craven, Duplin, Greene, Jones, Lenoir, Onslow, Pamlico, Pender, Pitt

District 1
May 28, 1965 Edenton Courthouse 7:30 p.m.
Bertie, Camden, Chowan, Currituck, Dare, Gates, Hertford, Hyde, Martin, Pasquotank, Perquimans, Tyrrell, Washington



Conducted by John Parker

THE information that follows will help you very little with the task of spring boat maintenance or cleanup. Neither will it help you maneuver safely through a summer squall. However, these facts and figures on boating might give you a better idea of your relative position in the boating world. So, for what it's worth, let's take a look at some of 1964's boating statistics.

At the outset, let us say that much of this information has been taken from a recent leaflet prepared jointly by the Outboard Boating Club of America and the National Association of Engine and Boat Manufacturers. The leaflet, entitled, *Boating 1964,* will be of interest to those of you desiring more details and would probably be sent free on request from OBC in Chicago. Most of the figures dealing specifically with North Carolina were taken from Wildlife Resources Commission records. Again, for those of you desirous of more details, the Skipper will gladly attempt to answer other questions on boating in North Carolina.

If you registered a boat last year (and you should have if you operate one powered by more than 10 horsepower on Tarheel waters), you were one of an estimated four and a half million plus in the United States who did so. That is quite a number and one that we will see grow.

As of June of last year, 45 states were operating some form of Coast Guard approved numbering system. The criteria for numbering boats by the various states is this: four have laws that cover registration of virtually all boats, 18 number all motor boats regardless of horsepower and 12 number all motorboats over 10 horsepower, (as mentioned above North Carolina fits into this last category), five number boats of 10 or more horsepower, and one, all motorboats over seven and a half horsepower. Three states require the registration of only motor boats over five horsepower and another, five or more horsepower. And finally one state registers motorboats of three and a half or more horsepower.

The total number of boats registered in North Carolina last year was 48,041—an increase of about 3,000 over the previous year. As you would expect, the majority of boats registered are pleasure boats. Actually over ninety precent of the total are for pleasure use rather than commercial.

Probably the most publicized boating statistic is that about 38 million people participate in recreational boating. The recent OBC survey estimates that 38,500,000 persons made use of U. S. waterways more than once or twice during 1964. With figures like this floating around it is easy to see why more funds are needed for boating facilities all over the country.

Speaking of funds or money, here is a figure that the average boater would certainly call astronomical. The OBC report estimates that $2,605,000,000 was spent on all phases of boating last year. The estimate includes everything from the buying of new boats to boating club membership dues. Since everybody's game supposedly adds to the booming economy of the sixties, boaters can certainly be proud of their part.

How many boats are there in existence on the waters of the United States? According to the report, there are enough for New York City's teaming millions to have one each. In other words, there are about 7,700,000 of all types. Imagine what Long Island Sound would look like if the New York population decided to cast off all at once!

Of the figures mentioned above, the biggest classification is, as you might guess, the outboard boat. The figure given is 4,425,000. The second largest group 2,200,000 involves the smallest boats or the rowboats, canoes, dinghies, prams, etc., some of which are used with motors. From this we can assume that there are still quite a few people who like the feel of good oars or a paddle. Other entries under the total number of boats column include 550,000 inboard motor boats, and 525,000 sailboats without inboard power.

The number of outboard motors in use was given as 6,564,000. Closer to home we find that the survey lists 95,000 in use in North Carolina. A little arithmetic will reveal that there are apparently about 47,000 motors of ten horsepower or under in use in the state. Since the survey estimates that 6,200 motors were purchased in this state last year one would assume that by the end of 1965 there will be over a 100,000 outboard motors in use in North Carolina even though a few are retired from service or dropped overboard either accidentally or otherwise.

All this motor talk still doesn't tell us how many boats of all kinds are in use in this state, but if you guessed 150,000 or 250,000 you might be right; who knows? There are a considerable number of pond and creek boats and sailboats to add to the runabouts, cruisers, etc.

Boat trailers, too, enter into this business of boats and boating statistics. As best we can learn, boat trailers are not separated in registration from other North Carolina highway trailers. So again a guess is needed and we hope that 75,000 sounds like an educated one. Boat trailers in use—both homemade and factory built—in the United States according to the OBC survey number 3,348,000.

Where do the boaters of the state and nation go when they want to launch a boat or receive some form of boating service? They go to one of the 5,300

marinas, boat yards or yacht clubs throughout these United States. Of this figure, North Carolina has approximately 100 marinas, boat yards, boat clubs, and lesser boating facilities along its expansive coast. In addition to this estimate, the North Carolina Wildlife Resources Commission now maintains 72 boating and fishing access areas with a number of others in the planning stage.

What do the individuals prefer who make up this multitude of boaters? They must like boats and boating, salt spray, clear lakes, quiet coves, boat races, skiing or one of the other phases of water recreation built around boats. And as for what they do, the survey which we have been working through explains that 27 percent of the boat buyers are skilled workers, 18 percent are professional people, 17 percent are involved in clerical and sales work, 12 percent are semi-skilled, etc.

The most popular boat length seems to be the 14½-to 16½-boat with 39 percent of the purchases in this category. About 14 percent of the purchases were 13½ feet or less, 28 percent were in the 13½-to 14½-category and 20 percent over 16½ feet. These, of course, are national figures. A recent Wildlife Resources Commission survey reveals similar data stated slightly differently. About half of the pleasure boats registered fall into the 11-to 14-foot category with the other half in the 15-19 foot category. Of the other few thousand boats not considered in the above category, the largest group is the 20-24 footer numbering about 1750. Other types of which there were a few hundred each registered include the under 10's and over 25's with about 60 in the over 40-foot class.

How much power is being installed in the majority of the outboard boats? Well, according to the report the average is 30 horsepower. Ten years ago it was 10 horsepower. Several breakdowns are given but we shall only note that all motor classes received a goodly percent of the total so there is still a place for the five or ten, etc.

We stated at the beginning that you would not be a better sailor for having read this. By this time you may agree. However, there is one important point about all of these facts and figures plus many others not mentioned. That point is that boating and boating needs are growing just as the other recreational needs and will continue to do so. In some way facility growth must keep pace. Some 16 states, of which North Carolina is not included, are now utilizing marine fuel tax moneys for this purpose and boaters of other states plan and hope.

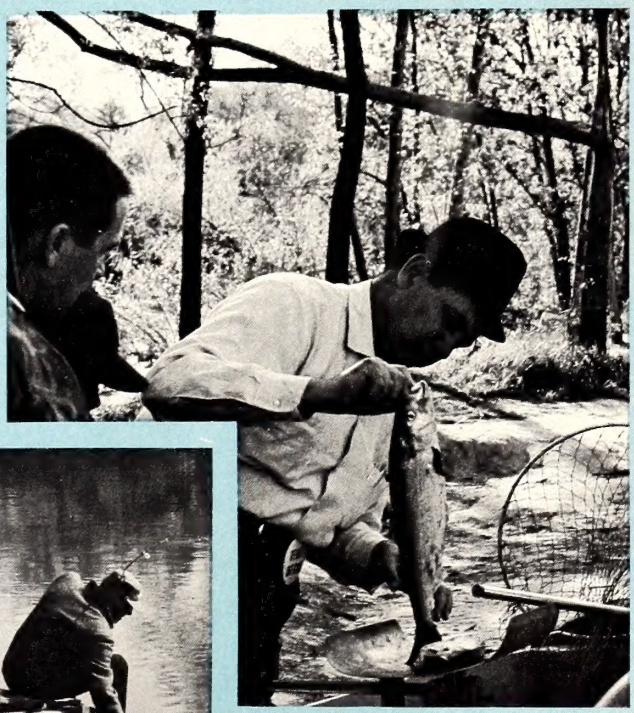
SHAD DERBY

In the weeks ahead, the banks of the Tar River at Rocky Mount will once again be the scene of some unusual fishing. In fact, this unusual fishing will take the form of a fishing derby, the Fifth Annual Shad Derby. As you would expect, the quarry will be shad; but not just any shad. It will have to be a big one to take the prize. The winner should stroll up to the weighing station with a white shad weighing in the neighborhood of four pounds. For his efforts, he will take home the Derby Trophy plus the chance to win another prize.

The derby, sponsored by the Nash County Wildlife Club, will run for two weeks with April 11, 14, 17, 18, and 21 as qualifying dates. The Fish Off will be held on Saturday, April 23.

For those not familiar with the derby, the fishing area is upstream of the Highway 301A, North, bridge at the Wildlife Access area. Fishing will take place on both sides of the river from the bridge to the Rocky Mount Mills Dam.

An entry fee of $1.00 entitles the fisherman to fish throughout the derby and the chance to win a Lucky Number Badge prize at the Shad Derby Banquet May 4.



Outdoor Recreation and the National Forests in North Carolina

by Peter J. Hanlon
U. S. Forest Service

THE Outdoor Recreation Resource Review Commission report states: "By the year 2000 our population will nearly double; the overall demand for outdoor recreation will triple. Not only will there be more people, but they will have more free time, more money, and more mobility. Already, the increase in demand for outdoor recreation is surging ahead of population growth. Whatever measuring stick is used, it is clear that Americans are seeking the outdoors as never before. And this is only a forecast of what is to come." Congress established the Outdoor Recreation Resource Review Commission in 1958 and directed it to survey the outdoor recreation needs of the American people over the next 40 years and to recommend actions to meet these needs.

Where does the State of North Carolina in general and the National Forests in North Carolina in particular fit into the picture of ever increasing demands for outdoor recreation? Beautiful mountains and clear streams, good climate, ample hunting and fishing opportunities, and easy accessibility from population centers in the Eastern United States are a few of the factors indicating a substantial increase in outdoor recreation demand. North Carolina has all the attributes needed to become one of the leading outdoor recreation states in the nation.

The recent enactment by Congress of Public Law 88-578 "The Land and Water Conservation Fund Program" gives added emphasis to the development of outdoor recreation. Under this program 60 per cent of the money is available to the states for approved outdoor recreation activities. This will give the State of North Carolina an opportunity to provide needed outdoor recreation opportunities.

Outdoor recreation can encompass all outside activities. However, on the National Forests in North Carolina outdoor recreation generally means hunting and fishing, camping, picnicking, hiking, sightseeing, boating, and swimming. There are other outdoor activities that are now minor. Although the above activities are listed as separate forms of outdoor recreation in reality this is not true. The summer trout fisherman may combine a fishing trip with a camp-out. On the same trip he may hike and do some sightseeing. The fall deer hunter finds camping as one of the highlights of his trip. Certainly the recreationist can combine these activities and have increased pleasure from his outing. The National Forests in North Carolina are ideal for developing a balanced recreation program whereby users can fully and genuinely enjoy an outdoor experience.

U. S. FOREST SERVICE

Successful hunter in the North Mills area of the Pisgah National Forest.

Hunting and fishing are very popular outdoor activities on the National Forests in North Carolina—totaling about one-half million visits in 1963. The half-million mark will probably be exceeded when the 1964 figures are totaled. Hunting and fishing use are about equal.

Both hunting and fishing provide an opportunity to enjoy other outdoor activities. Camping is closely associated with hunting and fishing. A combined fishing trip and picnic is a popular family outing. Fishermen have missed a truly satisfying experience who haven't eaten freshly caught trout prepared over a campfire. The hunter who hasn't swapped yarns around an evening campfire has missed an important part of a hunting trip.

It is the responsibilty of the National Forests in North Carolina to provide a suitable habitat for wildlife and fish and at the same time consider other resource needs. This responsibility extends to non-game birds, mammals, and fish as well as those designated as game species. Forest Service efforts are directed toward meeting responsibilities in this important phase of outdoor recreation.

Sightseeing is the most popular outdoor activity on the National Forests in North Carolina. The mountain Forests, Nantahala and Pisgah, are particularly popular sightseeing areas. The popularity of these Forests is understandable. Such attractions as Whitewater Falls, Dry Falls, Linville Gorge, Table Rock Mountain, Roan Mountain, Wayah Bald, and Joyce Kilmer Forest attract large numbers of visitors. However, the largest number of sighseers are attracted by scenery in the general forest areas—mountains, streams, wild flowers, fall colors, animals, etc.

It is very difficult to separate sightseeing from other types of outdoor recreation. The hunter, fisherman, camper, etc. is sightseeing at least part of the time during his outing, sometimes subconsciously. Sightseeing provides a rewarding and lasting experience.

Camping has become an ex-

tremely popular outdoor activity. Camping is very popular during the summer months; however, camping during the fall color season and hunting season is gaining in popularity.

Camping is generally considered a family outdoor activity. Youngsters particularly enjoy camping and with proper guidance can learn to appreciate and interpret nature and the forest environment—and to properly use and protect it.

Camping popularity is growing faster than the development of camping facilities. This is evidenced not only on the National Forests of North Carolina but in the Great Smoky Mountains National Park and on the Blue Ridge Parkway. It is difficult to find camping space in developed recreation areas during the months of July, August, and September.

Through the cooperative efforts of the North Carolina Wildlife Resources Commission several wilderness camps are operated for hunters during the annual managed hunts on the Cooperative Wildlife Management areas. This provides the hunter an opportunity to enjoy both his hunt and a wilderness camping experience.

Sightseeing excepted, *picnicking* is the most popular outdoor activity on the National Forests in North Carolina.

It is difficult to separate picnicking from other outdoor activities. Picnicking goes with other outdoor activities like "ham and eggs." Sightseeing, fishing, swimming, boating, hiking, etc. all lend themselves toward picnicking. The family or group picnic is a tradition in this country. Certainly it is an outdoor activity that most of us thoroughly enjoy.

Although *hiking and riding* are not as popular as other outdoor activities, they are both important forms of outdoor recreation. At the present time, there is a greater demand for hiking than riding.

Hiking and riding provide the outdoor recreationist with an opportunity to observe scenery and enjoy a greater wilderness experience than is generally available to the sightseer, picnicker, etc. The hiker or rider is generally an individual who wants to get away from the "beaten" path.

Hiker approaches a sturdy lean-to on the Appalachian Trail. U. S. FOREST SERVICE

Trails are almost a prerequisite for hiking and riding. There are 140 miles of the Appalachian Trail and many times this number of miles of Forest Service trails in the National Forests in North Carolina. Trails are not only important to the hiker and rider but play an important part in hunting and fishing.

There are *other outdoor activities* such as bird watching, swimming, boating, rock-hounding, etc. These are all desirable forms of outdoor recreation and are desirable uses of the National Forests in North Carolina.

The importance of outdoor recreation can be illustrated by the fact that in 1963 there were over 4,000,000 outdoor recreation visits to the National Forests in North Carolina. Undoubtedly, 1964 has surpassed these figures.

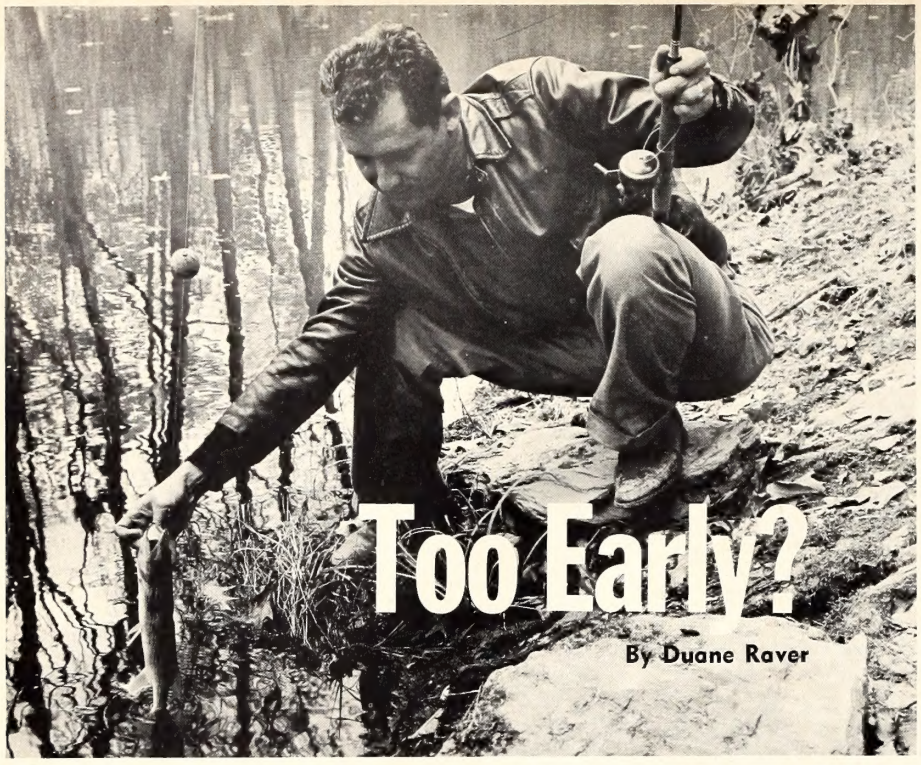
National Forests are administered under the principle of multiple-use. Although this term became popular in the past decade, multiple-use in the United States goes back to the origin of the National Forests more than half a century ago.

Full recognition of multiple-use principles of land management was achieved by the 86th Congress when it passed "The Multiple-Use Sustained-Yield Act." The significance of this enactment is: first, legislative recognition of multiple-use and sustained-yield principles of management; second, a clear-cut directive to apply these principles on the National Forests; and third, naming the basic renewable resources (water, recreation, wood, forage, and wildlife) for which the National Forests were established and are administered assuring them equal consideration under law.

To meet the increased demands for outdoor recreation, and other resources, a program geared to multiple-use is mandatory. Also, close coordination is needed in planning and executing recreation programs in order to assure proper consideration of all forms of outdoor recreation. Toward achieving these goals the National Forests in North Carolina developed a Multiple Use Guide for Ranger District Administration. All Forest Service lands in North Carolina are managed under the principles of multiple-use sustained-yield.

The outdoor Recreation Resource Review Commission report states: "By the year 2000 our population will nearly double; the overall demand for outdoor recreation will triple." With the obvious potential in North Carolina, the demand for outdoor recreation will increase tremendously over the next several years.

To meet this ever increasing demand for all forms of outdoor recreation, it is essential that the National Forests in North Carolina develop comprehensive plans to assure a coordinated program not only between recreation and other resources but between the various outdoor activities themselves. It is only through a carefully coordinated program that we can provide for future needs. Such plans are being developed and will furnish the guidance needed to meet the future demands for outdoor recreation on the National Forests in North Carolina.



Too Early?

By Duane Raver

LUTHER PARTIN

IF you mean is it too early to go fishing, the answer is "no"; lots of hardy souls have been out on the ponds and streams for weeks and even months. Some of the year's largest fish will fall between February 1 and early May. Yet with all this optimistic talk, very early fishing is often a bit disappointing. Perhaps it is because we're so eager to catch a fish after a winter's layoff, but more likely it is the fact that fish move about quite slowly until the water really warms up and they aren't feeding to the extent that they will in another month or so.

Of course the trout fisherman cares little about cold water because trout quite often feed right through icy weather since many of these streams actually vary only a few degrees from season to season. But the pond and lake angler faces quite a different situation. Water temperatures lag far behind air temperatures, and although we may over-emphasize it, fish are creatures of temperature to a large extent.

This stems from the fact that fish are "cold blooded", that is, the temperature of their bodies is that of the surrounding water. They can't regulate this temperature like mammals and birds do. All of the fish's bodily processes operate at a speed that is dictated by the surrounding temperature. For example, a fish utilizes less food at 40° than he does at 70°. It stands to reason that his intake of food is considerably less at the lower temperatures than it is at balmier times. This does not mean to say that fish don't eat during cold weather, but they certainly have less reason to eat.

Chilly surroundings may actually slow the *movements* of many pond and lake fish too. Since they probably have less reason to move and a lot less inclination to do so, most fish under these low-temperature conditions simply amble around in a restricted area and display a minimum of ambition. This, then, is a rather pessimistic picture: a bunch of fish that don't need to eat, and probably don't want to, staying put in fairly deep water. Who'd want to fish under these conditions?

The answer is the fishermen who go out and catch fish anyway! But it takes a bit of doing, this early season angling. Sticking to ponds and lakes, let's look at a few Aprilish situations and try and figure them out. If it's true that bass, bluegills, and their cousins prefer water temperatures up around the 65 to 75 degree mark, our best bet is to look for shallow water sites where the spring sun can up the thermometer quickly. It may seem odd to sneak up to a flat that has only a foot or so of water and begin tossing a bait. But bass particularly soon find these spots —especially during mid-day.

Now, anyone who has been confronted with very shallow water for his fishing knows that this is a tough assignment. Fish are almost always more wary and nervous when they have only a few inches of water over their backs. Too, they can generally pick up movements better either by sight or vibration detection. This means that they know you're there long before you find them. The answer? A long line, a delicate presentation of the lure or bait, and a heaping measure of patience. Once the fish are spooked or scared back into deep water, they may not feed for hours.

A fly rod seems the most logical choice under these circumstances, but don't rule out the long cane pole or even the spinning rod. Which ever you select, you most likely will want to use it from a boat eased into position offshore as far as you can cast the bait. Stealth generally pays off in fishing and is almost essential here. Wading works fairly well, and this means one step at a time, casting ahead of you, parallel to the shoreline. It's a bit exasperating to see a nice fish go zipping out from under your feet before you've had a chance at him, but this is often part of the game. At least you know that they are there.

In shallow water, say less than two feet deep, another problem quickly becomes evident, and that is you simply don't have long to present the bait to the fish since it sinks to the bottom in a few seconds. A tiny cork a foot or so up from the bait (which should have no sinker) helps keep it in view of the fish for a longer time. But it does

• **continued on page 26**

CRACK SHOTS and BACKLASHES

DEPARTMENT OF LETTERS TO THE EDITORS, FIELD NOTES, AND ITEMS OF INTEREST

Conducted By Rod Amundson

April is the month in which fishermen get a really good opportunity to relieve pent-up blood pressure that has been approaching the bursting point since late winter. Despite occasional chill winds the weather and the water are warmer. Fish that have been sulking near the bottom all winter long are looking for something to eat. They are ready to break a fast and along with the early bird they will get the worm—or almost any other bait properly presented to them.

April is a time of new awakening and new growth, a time for budding and blossoming and borning; a time for Nature to begin again her eternal cycle of replenishing the land. Violets and trailing arbutus and crocus and dogwoods bloom. Songbirds somehow find time to sing while they build their nests; frogs and toads make springtime noises and balmy breezes chilled by winter-frozen soil give promise of the summer to come.

As it always has, spring has come again to North Carolina.

This young redwing blackbird is a bit undecided about the new world.

Weighty Subject

DEAR SIRS: For white tail buck deer on the WNC Management areas, could you please tell me how to determine the approximate live weight of a deer which has been field dressed.

For example, what percentage of the field dressed weight of a 157 pound buck (all entrails, heart, etc. removed) should be added to arrive at the approximate live weight—or does the field dressed weight have any bearing on the percentage? This applies to healthy buck deer with heavy antlers of 6 or 8 points. EDWARD HAIGH, CONCORD

Researcher Andy Weber of our Division of Game tells us there is no pat formula for determining live weight from a field-dressed carcass. Andy is working on the problem, and will have an article on the subject in a forthcoming issue of *Wildlife*. You may expect the formula to be somewhat complicated. —Ed.

DEAR SIRS: I would like to tell you what I saw a few so-called sportsmen doing a few days ago.

I was coming home from work when I saw a man combining soybeans in a field beside the road. There were three men in the field with guns waiting for the combine to come by. There were seven rabbits that came out of the field and the men killed six. This all happened about two weeks before the rabbit season came in. The three men I knew very well, were so-called rabbit hunters and also have dogs for hunting.

This is one of the many reasons for the lack of game in the piedmont section of North Carolina. I am wondering just how many "sportsmen" like this we have in North Carolina?. (Name withheld by request)

'Rat Trouble

DEAR SIRS: Do you have any information concerning muskrats boring into styrofoam blocks? If this is true what procedure would you recommend to protect a floating dock made of this material? Dr. E. C. HART, KANNAPOLIS

We have no information on this—possible but not probable. Best protection would be covering the styrofoam with light poultry wire. —Ed.

Short Rations

DEAR SIRS: I am writing to see if you have any information as to why there are no hickory nuts or acorns this year. I am 69 years old, and I do not ever remember there not being any before. I thought it might be just in this area but I went 70 miles down in Anson County and the same thing prevails there. What I would like to know if this is confined more or less to the piedmont or the entire state?

Another thing, without this food supply what happens to our squirrel population? Will there be enough food of other varieties to carry them through the winter?

We have had so many here until sometimes they get to be kind of a menace; but now I am concerned for they are gone. Where we used to see four to five in one tree now maybe you see one in a week's time. If you have anything on this situation I will appreciate the information. Thanks. D. F. DENNIS, High Point

Mast crop failures are hard to explain, but usually are caused by late spring frost, sometimes by severe drouth. Deer and squirrels, where mast is in short supply, will have to depend on browse (squirrels eat buds, etc.) --Ed.

Bird Mystery

DEAR SIRS: Sunday afternoon a friend and I observed flying over the lot on the side of our house in the northern, almost outskirts of town, what appeared to be a female duck hawk (perigrine falcon). We ascertained this from the beautiful color photos of the *Birds of North Carolina*, and also the black and white ones in Peterson's *Field Guide to Birds*. There was only one problem, instead of flying with the very swift wing beat like it should, the thing was gliding, and did for the hundred yards of the flight that we saw!

Once before we had seen some sort of falcon; but had been unable to identify it. Could the bird have been possibly a sea bird? However, this one contained all of the falcon characteristics that I know of—tail and all! PETER SCOTT, DURHAM

Falcons rarely, if ever, soar, Without seeing the bird it would

KNOW YOUR PROTECTOR

Joe F. James

Wildlife Patrolman Joe F. James of Conover, North Carolina was born in Madison County, Georgia on February 5, 1932. His parents are Mr. and Mrs. C. W. James of Kannapolis, North Carolina. He moved to Cabarrus County, North Carolina in 1941 and is a graduate of Odell High School, Concord, North Carolina.

He completed the 1957 preservice training school for wildlife protectors at the Institute of Government at Chapel Hill, North Carolina, and was employed as wildlife protector in Bladen County in October, 1958. In June, 1962 he was transferred to Morganton, North Carolina. In December, 1963 he was promoted to wildlife patrolman position in Conover, North Carolina. He attended four in-service training schools at the Institute of Government at Chapel Hill, North Carolina, is a member of the Southeastern Association of Game and Fish Commissioners, a National Rifle Association Hunter Safety Instructor, a member of the Morganton Flying Club, and holds a Commercial Pilot's License.

He is married to the former Shirley Swink of Kannapolis, North Carolina and has two daughters, Kim 9, and Glynis 11.

DIVISION ENFORCEMENT RECORD FOR OCTOBER, 1964

HUNTING & FISHING

Persons checked	28,109
Total prosecutions	795
Total convictions	762
Total cases not guilty	17
Total cases nol prossed	16
Total cases dismissed	0
Total Fines collected	$6,296.20
Total Costs collected	$5,398.65

BOATING

Boats checked	672
Total prosecutions	26
Total convictions	25
Total cases not guilty	0
Total cases nol prossed	1
Total Fines collected	$ 20.50
Total Costs collected	$162.90

All fines and any arrest or witness fees are paid into the school funds of the counties in which the violations occurred, and no part of the fines or costs collected are paid to the North Carolina Wildlife Resources Commission or its personnel.

be impossible for us to identify it. Interesting, but puzzling! —Ed.

Down the Drain?

DEAR SIRS: I am writing you in hopes that the below facts might be published in the *Wildlife* Magazine. These facts should be of interest to every sportsman who has had the pleasure and enjoyment of fishing or hunting on Currituck Sound.

A movement is currently in progress by the City of Virginia Beach to cut or dredge four so-called drainage channels from areas within their city proper to the upper reaches of Back Bay and Currituck Sound.

Drainage channels they call them; however, these channels will be of sufficient width and depth to allow large cabin cruisers and water craft to traverse from sea through salty Lynnhaven River to Currituck Sound, These channels will be of sufficient depth, eight feet below mean sea level and 60 feet wide at the bottom, to allow excess salt water and silt to sift into both Back Bay and Currituck Sound.

In 1960 a similar venture was used by Virginia Beach, on a small scale, where drainage ditches were cut into the feeder creeks and small streams leading to the Back Bay area. This resulted in silt drainage which deposited countless tons of silt in the areas which produced the necessary grasses and other natural foods needed to sustain the waterfowl species. The spring runoff of silt also covered the spring fish spawns resulting in low hatch rates of bass, bream, and other species. The over all results has been the destruction of a former fisherman-duck hunter paradise, Back Bay.

It now appears that this same city, with its current fast moving ideas, plans not only further destruction of Back Bay, but will introduce salt water penetration of the fresh waters of Currituck Sound. I needn't point out the end result to the goose, duck and bass populations now abundant in Currituck Sound.

Can we North Carolinians sit back and watch one of our water wonderlands turned into a mud hole such as they have done to the once famous Back Bay?

I for one believe that North Carolina Wildlife Resources Commission deserves a pat on the back for a "job well done." However, they need the ever valuable support of the many thousands of sportsmen who look forward to another season of fine fishing and hunting on Currituck Sound.

A closing thought: Are these drainage channels a solution to the soil conservation problems of Virginia Beach, or is this another long range business venture on their behalf?

JACK SMALL, PORTSMOUTH, VA.

Lots of Pines

DEAR SIRS: I would like to commend you on an excellent periodical. Our family frequently makes the trip down from Maryland to visit relatives in Richmond County, so I know what a beautiful State you most accurately describe. One question—I realize the many and varied groups of pine in the State, but exactly HOW MANY TYPES of pine have you? PHILLIP SAGI, HAGERSTOWN, MARYLAND.

There are eleven: Loblolly, longleaf, short leaf, Virginia, pond, white, Table Mountain, pitch, slash (introduced) Scotch and maritime, according to the N. C. Division of Forestry (we were glad to learn this too!)—Ed.

TOO EARLY?

• **continued from page 24**

splash more, so take your choice. This bait we've been talking about can be of the natural variety, earthworms or minnows, or even a bit of shrimp, or it can be a wet fly or streamer. In the case of the artificials, the flyrod is the only logical answer, and no float (other than a good line that will stay up) is needed.

More water that is productive can be covered by the parallel shoreline cast than one that is

tossed from almost perpendicular to the shoreline. If lures that require considerable movement or even moderate speed to be effective are to be used, this cast is just about mandatory. In other words, you are covering several yards of shallow water per cast instead of only a few feet at a time. But it still calls for thoroughness. Don't count on the fish of these chilly waters to go great distances to pounce on your lure. The closer you come to the fish with a tempting lure, the better your chances are of scoring.

Live minnows—the larger ones for bass, the smaller size for crappies and even bluegills—may be the answer to this edge fishing. If, that is, you can keep them out of the vegetation that often is present along the pond shoreline. Hook the minnow very lightly through the lips, use no weight, and gently toss it as far as possible, creating the least surface commotion. You may find that a small float is advisable here also. When contact is made, allow the fish a few extra seconds to take the minnow. Remember the reaction time is likely to be less until warmer conditions show up.

We mentioned fly fishing, and this may surprise some anglers who wait until much later to try artificials. We do qualify the term "flies" to mean primarily wet flies and streamers, and we won't say much about surface lures right now.

Some aquatic insects remain in the nymph stage all winter and into the spring months and therefore are available to the fish for long periods. Bluegills especially may feed on them and a number 10 wetfly or nymph fished slowly should get results. This is one place that the deeper water may pay off better than the edge shallows. The strike won't be the quick thrust of late spring and summer, but rather a dainty twitch that can be difficult to detect. Set the hook at the least suggestion.

We keep mentioning how the chilly water seems to slow up many fish, and how they apparently move about very little, and then along comes a half-pound bluegill, sucks in the tiny fly and takes off! You will soon discover that there is nothing at all wrong with the scrap of these early spring fish. As a matter of fact they may be zippier now than at any other time of the year.

The answer to putting the fish on the stringer is to find where they are first. This brilliant deduction holds true for year round angling, but since the fish may be bunched up even more now, and in less likely places, the hunting is an important as the fishing. After trying the shallows, hit the real deep water—particularly for panfish. If you can get down to it, 10 feet is none too deep to try.

About all we've said then, about this early fishing is to try the water that comes the closest to the temperature the fish like. If the shallows have warmed up, this is the spot; if not, the deepest sections will actually be a few degrees higher than the intermediate layers. Perhaps it is the speed (or really the lack of it) at which we fish that makes the difference. It may take a dozen casts over the same fish before he makes up his mind. Too early? It's never too early to go fishing.

LUTHER PARTIN

Sam Davis, Jr., of Route 2, Hayesville, won honors as the 1964 State 4-H winner in Wildlife Conservation. Hugh Fields, Wildlife Extension Specialist at N. C. State College, is shown making the award to Sam and his proud parents. The Wildlife Commission sponsors this award and sends the winner to the National 4-H Club Congress meeting.

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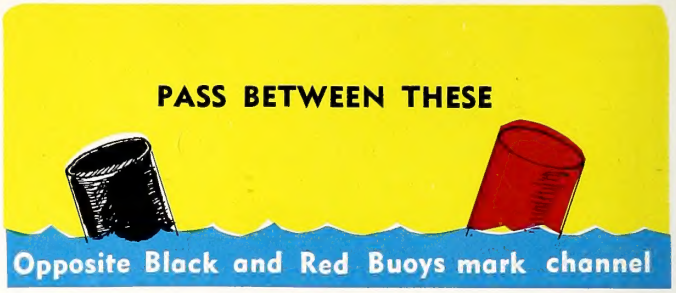

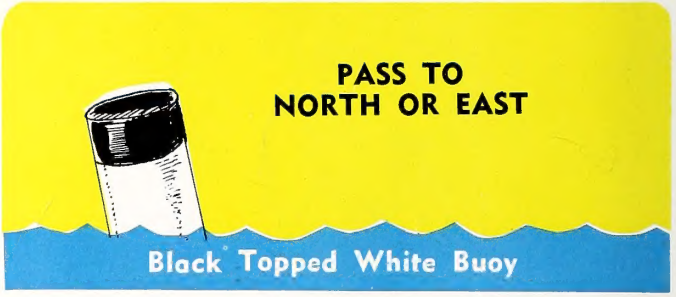

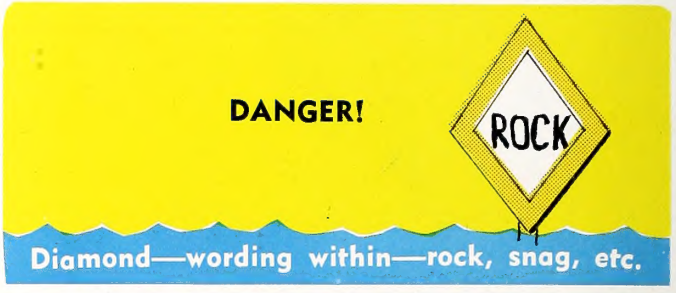

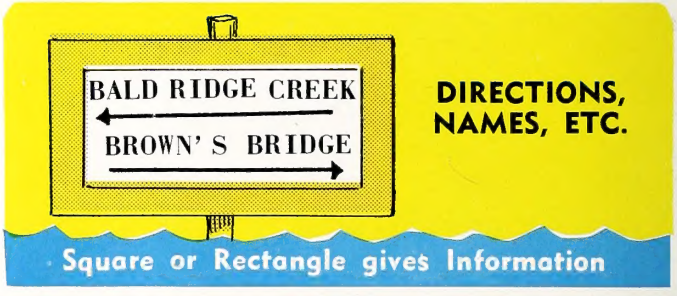

As States ratify and adopt the new system, these markers will be seen on inland lakes and streams in addition to or instead of other navigational aids. They may be lighted, reflectorized, or numbered.

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Wildlife IN NORTH CAROLINA

MAY, 1965

Glossy Ibis Silhouetted at Battery Island

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WILDLIFE IN NORTH CAROLINA recognizes the need for close cooperation between State and Federal conservation agencies and the people who hunt and fish—to bring about a restoration of our renewable resources. The Editor gratefully receives for publication news items, articles, and photographs dealing with the North Carolina out-of-doors, but reserves the right to reject materials submitted. Full credit is given for all materials published.

* * *

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MAY, 1965 VOL. XXIX, NO. 5

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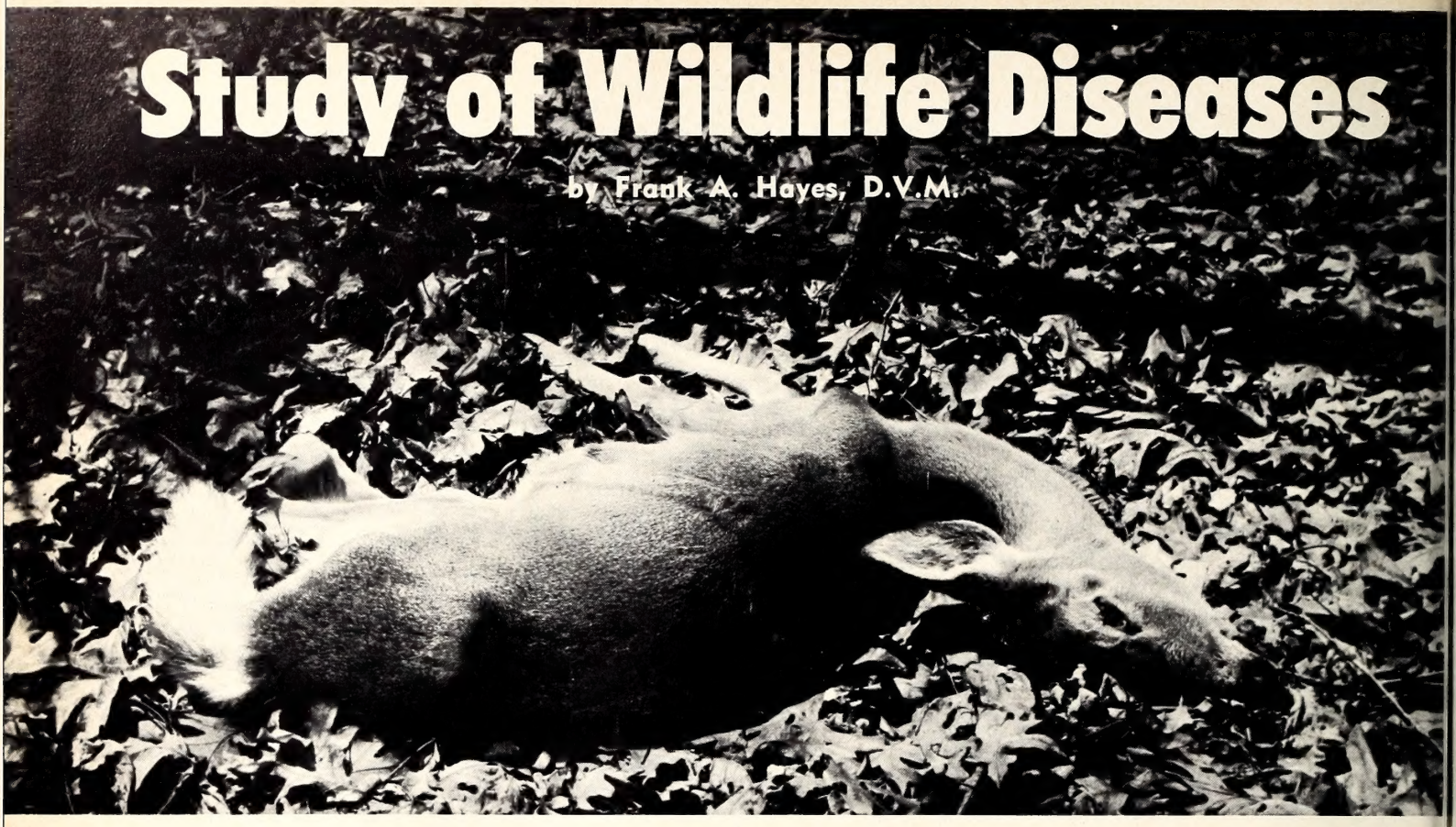
The common egret is one of the showiest of our nesting birds. This family was photographed at Battery Island where many hundreds of water birds come to nest each spring. The parent has returned from a successful fishing trip and prepares to feed the eager young. For additional rookery scenes, see the photo feature on page 13. Ektachrome transparency by Joel Arrington.

Study of Wildlife Diseases

by Frank A. Hayes, D.V.M.



The author is Director of the Southeastern Cooperative Wildlife Disease Study, at the School of Veterinary Medicine, University of Georgia. This is the first regional diagnostic and research service established in the U. S. for the specific purpose of investigating diseases of wild animals. This is part I.

WHEN there is sickness in a family, it is the customary practice to call a physician. When the household pet or livestock becomes ill, calling a graduate veterinarian is the preferred recourse. But whenever disease strikes wild game animals, and they start dying by the thousands —*who* calls *whom*?

In the United States of America, game animals are a property of the people, and duly appointed state agencies are entrusted with their health and well-being. During emergencies involving this valuable natural resource, the matter of *who* does the calling therefore is resolved, but from *whom* assistance should come frequently presents a perplexing problem for game and fish agencies throughout most regions of this country.

In the fall of 1949, southeastern game and fish officials were confronted with a dilemma of this type. A killing deer disease struck, and these prized big game animals died in great numbers. The cause was not and never will be determined.

Although drastically reduced, for the next several years most staggered deer herds of the Southeast appeared well on the way to recovery from the mysterious disease. Then, out of nowhere, in the fall of 1954, "Killer X" was on the prowl again, and bloated deer carcasses blighted field and forest in many localities of numerous states.

This catastrophe recurred in the fall of 1955, and for one month deer herds from the Appalachians of North Carolina to the Ozarks of Arkansas were ravished by what appeared to be the same killer. In some areas mortality was estimated as high as ninety per cent, but once again the insidious destroyer was not identified.

Committees and subcommittees were appointed. Much soul search followed. After careful deliberation by many individuals and Government agencies, it was mutually agreed that a regional study should be established, whereby a specific organization would be maintained for investi-

gating diseases of white-tailed deer. The University of Georgia's School of Veterinary Medicine was selected as headquarters for this pilot program. On July 1, 1957, the Southeastern Cooperative Deer Disease Study became a reality.

Much of the first year was spent waiting. Waiting for what? No one knew. Fortunately nothing of major consequence occurred.

During these early months of planning and studying, there developed an increasing awareness of just how little information was available on diseases which may or may not affect deer. In fact, the *may* or *may not* considerations of deer diseases were most intriguing.

It was soon realized that no one really knew what constituted a normal, healthy deer. Without this information, accurate interpretations of diseased animals could not be made. The future was depressing. The dread of heavy deer mortality cast its gloom over the new project.

Mother Nature was kind, as almost a year passed before trouble occurred. This period of grace permitted the accumulation of vital information.

THE project's first real deer "die-off" occurred in early March of 1958. One hundred sixty-one Sika deer on James Island, Maryland, sucumbed to starvation and pine oil poisoning. The project now had been baptized by heavy deer mortality. Much was learned, but not nearly enough.

This education was continued by another incident that also involved the Maryland Game and Inland Fish Commission. In February of 1961, freezing weather coupled with starvation and parasitism inflicted heavy mortality in deer at the Aberdeen Proving Ground. An estimated 1000 deer were lost. Although the waste was great and frozen fawns presented a grotesque picture, at least the regional organization gained priceless experience.

A few weeks later death struck again, but this time deer in the mountains of North Carolina were the victims. Mortality was confined to the Daniel Boone Wildlife Management Area, and lung worms were positively incriminated as killers of an estimated 300 deer.

In each of the above events the joint-state organization was fortunate, as causes of mortality were obvious and diagnoses were relatively simple. During this interim there were also numerous occasions for examining deer carcasses presented for routine postmortem procedures.

The first three years were hard, many times confusing, and sometimes discouraging. Through these efforts, however, a tremendous amount of experience was gained, which proved invaluable to the over-all efficiency of what was to become a highly specialized, regional, diagnostic and research service.

Regardless of the unparalleled opportunities for studying sick and dead deer, the dearth of information available on normal animals still haunted the new project. Without additional knowledge, a major handicap would continue to shroud all efforts, and future field studies would remain limited.

As a result of this harsh reality, a plan was conceived whereby outwardly healthy deer from each state in the Southeast would be examined. A region-wide deer

Rabbits and bear are only two of the wild animals under study. The project is supported by the U. S. Fish and Wildlife Service (Region 4) and Southeastern Association of Fish and Game Commissioners. Participating States include Alabama, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, South Carolina, Tennessee, Virginia, and West Virginia.

JACK DERMID

parasite survey subsequently was proposed, whereby necropsies would be performed on a minimum of ten animals from at least one area of major interest in each participating state. This program, with double-barreled objectives, was accepted and launched in Sumter County, Alabama, July, 1961. As a result of maximum interest and cooperation of all deer biologists in the southeastern United States, the regional deer parasite program continued for two and one-half years. The last survey was completed in Beaufort County, South Carolina, November, 1963.

FROM this joint-state survey, 155 white-tailed deer were carefully dissected and all organs examined for pathologic lesions and internal parasites. Both external and internal parasites were collected from each deer, after which they were counted and identified. It was conservatively estimated that $25,000 was spent to accomplish this mammoth task. At such a cost, there is little wonder so little information had been available on diseases and parasites of white-tails in the Southeast.

In retrospect, a logical question is, "Has it been worth it"? For an answer, one might consider other questions pertaining to results of research. For example: "Has the polio vaccine been worth the cost of development"? "Would a cure for cancer justify research expenditures"?

To make a long story short, research of any kind is expensive —awfully expensive. Cost justifications therefore must be gauged by that which is hoped to be gained, and to what degree the information derived will benefit mankind. Down through the years, the Southeastern Association of Game and Fish Commissioners has fully recognized this criterion, and planning has been initiated accordingly.

On many occasions this regional organization has been highly honored through expressions of confidence. The initial annual budget of $18,000 has been raised to $48,000. This increase in operational capital greatly facilitated all aspects of the joint-state program. In addition, as of July 1, 1960, the originally designated Southeastern Cooperative Deer Disease Study was renamed Southeastern Cooperative Wildlife Disease Study. The scope of responsibility was expanded to afford a diagnostic service for all game animals suffering from disease and pestilence. During this period of relatively spectacular growth and development, extensive field and laboratory investigations have included such highly infectious diseases as Anthrax, Anaplasmosis, Brucellosis, Encephalitis, Tuberculosis, Tularemia, and Rabies.

MAJOR functions of the Southeastern Cooperative Wildlife Disease Study presently consist of determining causes of death in game animal populations and studying environmental factors which promote such occurrences. Secondary interests include investigating the unknown potential of various game animal diseases for transmission to domestic livestock or mankind. The objectives of the program therefore have been extended far beyond earlier concepts, where only a single deer disease was considered.

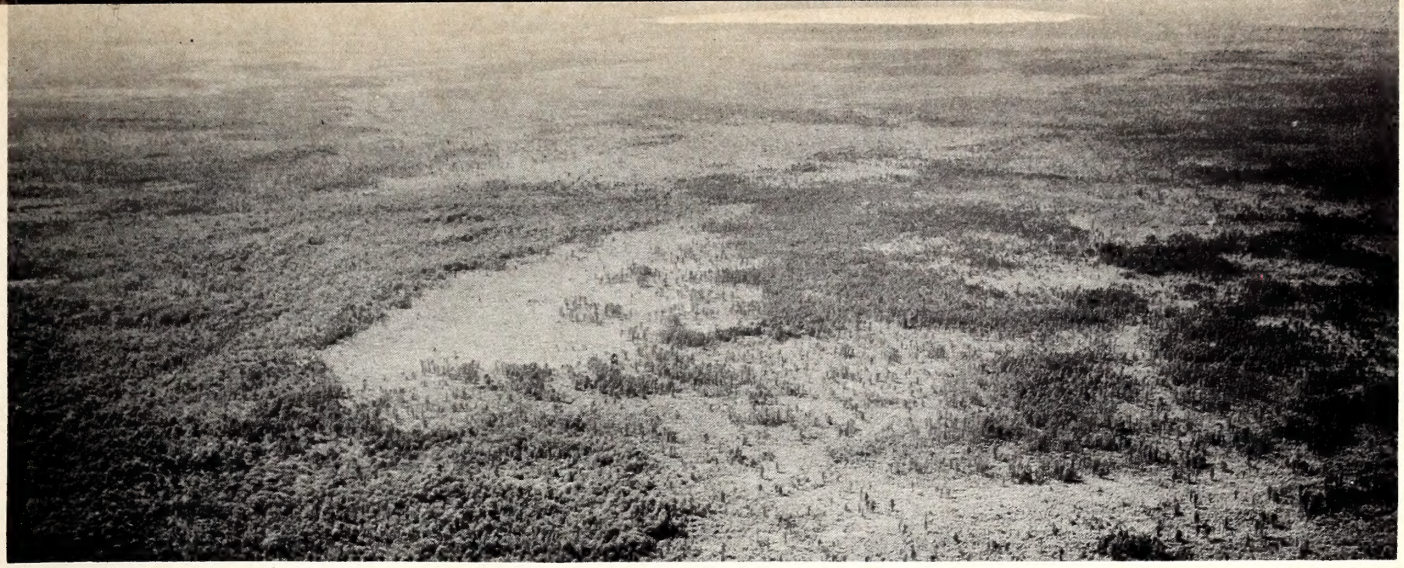
For accelerated activities of this magnitude, the present state-sponsored budget of $48,000 per annum can only suffice for staffing and maintaining a reasonably good wildlife disease diagnostic service. With each year's endeavors, however, needs for basic research in wild animal diseases became increasingly apparent. The Southeastern Association of Game and Fish Commissioners readily recognized these urgent demands upon their joint-state project. As a result of the interest and efforts of that organization and through the wisdom of the Eighty-eighth Congress of the United States, $200,000 was appropriated for annual support of basic research programs conducted under the auspices of the Southeastern Cooperative Wildlife Disease Study.

LUTHER PARTIN

Fibromata or benign tumors like these usually do not cause mortality. But such diseases are under surveillance.

For guidance of this program, a Steering Committee was appointed by the President of the Southeastern Association of Game and Fish Commissioners. This group consists of two southeastern state game and fish directors, and one representative from the U. S. Fish and Wildlife Service, the Wildlife Management Institute, and the Georgia School of Veterinary Medicine respectively. The specific function of this committee is to represent all states of the Southeast in the selection of research programs to be conducted within the confines of federal funds. Thus far, two appropriations have been budgeted for studies which are considered most vital for game animal conservation throughout the entire region.

The first $200,000 appropriation became available in July of 1963, but it was not until January 1, 1964, that research actually commenced. During this interim, many previously, unanticipated obstacles were encountered; much planning was necessary, but in retrospect the delay proved advantageous in many ways. Next month: Part II



LAKE DRUMMOND

JACK DERMID

An Introduction to the

Great Dismal Swamp

by Roger H. de Rageot
Curator of Natural History
Norfolk Museum

THE name Dismal Swamp at once evokes an atmosphere of mystery, and a presentment of evil to persons who have never penetrated into the confines of this great, but little known, remaning stronghold of untamed wilderness.

With the exception of hunters, lumbermen, and naturalists, few people have explored the area carefully enough to obtain an accurate picture of its fascinating flora and fauna.

Made world famous by poets and writers of folklore, the great Dismal Swamp is generally imagined to be an impenetrable morass full of danger for the novice.

Countless people have become lost on hunting trips in this great wilderness through the centuries, and seldom a year passes that a hunter or two fails to get hopelessly entangled in this wilderness. On December 13, 1955, two hunters were lost in the Dismal Swamp for several days in subfreezing and rainy weather. An extensive search was organized in which over 100 Marines and countless volunteers, helicopters, guides, and wardens took part. The men were finally found after a four-day ordeal. This event, by no means uncommon, made national headlines.

Even though the Swamp may be a place of danger to the inexperienced, for the initiated it can be one graced with romance, which the famed poet Thomas Moore expressed so well in his well-known verses, "The Lake of the Dismal Swamp," which has done more to keep his memory green in Virginia than all of his other verses. The house where he sojourned a 100 years ago is today regarded by students as one of the most interesting literary landmarks of Norfolk.

O'Reilley wrote as follows to a friend, the letter being published in the Boston Herald:

"In the Dismal Swamp," Wednesday Morning, May 16, 1888. I write this from near the heart of the Dismal Swamp and send it by an obliging canal man to Norfolk.

"This place is wonderful and beautiful. It is a desolate land crying for attention and reclamation. The story of the Dismal Swamp is a tragedy for nature and a disgrace to civilization.

"Mr. Mosely and I have had twenty-four hours of continued amazement and enjoyment. This is the most defamed land on the earth. The Dismal Swamp is the greatest sanitarium on the American Continent.

"Last night we stopped at Mr. Wallace's, in the Dismal Swamp —one of the largest and most beautiful farms in America. Last winter he killed on his farm thirty bears."

This quoted paragraph is taken from the book, *The Lake of the Great Dismal,* written by Charles Frederick Stansbury and published in 1925.

THE story of the great Dismal Swamp is full of folklore, legend, myth and fantasies. It is also filled with history in which the names of George Washington and Col. William Byrd figure prominently. However, if the history and folklores of the Dismal Swamp are well documented, the reverse is true concerning its flora and fauna. To this day very little comprehensive study has been devoted to the natural resources of this vast and beautiful wilderness.

General Description

The great Dismal Swamp is located southwest of Norfolk, in Nansemond, Norfolk and part of Princess Ann counties in Vir-

ginia, and Camden, Currituck, Gates, Perquimans, and Pasquotank counties in North Carolina. It is the northernmost of the chain of large southeastern swamps which extend along the mid-Atlantic coastal plains below the Piedmont Plateaus. The heart of the swamp region is approximately four square miles, and one of its deepest and more dense parts is found within the Old Dominion.

Originally the Swamp spread over approximately 2200 square miles of dense forest in southeastern Virginia and northeastern North Carolina. By 1890 it was estimated that a third of the Swamp had been drained and cleared, and slow but steady inroads have continued since.

In the center of the Swamp, is situated the famous Lake Drummond, which is seven miles in circumference and not more than six feet deep anywhere throughout its length.

The keynote of Lake Drummond is one of desolation, despite the beauty of its densely wooded shores of elm, cypress, juniper, and gum struggling for supremacy. As the eye wanders shoreward, this atmosphere of desolation is accentuated by the skeletons of cypress, long dead. No sign of life seems to disturb its solitude, except perhaps for a lone eagle soaring majestically in graceful circles.

A 3½ mile-long feeder ditch provides drainage from the east side of Lake Drummond to the Dismal Swamp Canal. The water level is regulated by a control dam maintained by the U. S. Army Corps of Engineers.

The most important ditches draining into Lake Drummond are the Washington and Jericho Ditches from the Northwest and the Portsmouth Ditch from the Northeast. Many other less important ditches have been added in recent years. Many sections of the swamp during normal periods of rainfall have no standing water and are dry enough for foot travel.

Geology

For many millions of years the Swamp was part of the floor of the ocean. Then during the Pliocene Period, great glaciers were formed around the poles.

LUTHER PARTIN

What will be the fate of swamps such as this? Once they are gone, only Nature and time can replace valuable wetlands.

The ice of these glaciers was formed from surrounding waters, making the ocean of the world much more shallow. As a result, the continental shelves rose for many miles beyond the present shoreline.

After this ice age period the climate became much warmer, causing the ice to melt, thus returning water to the oceans. Once again the ocean basins filled and encircled the continents. It is believed that four glacial periods occurred, with long interglacial periods intervening.

During the time when the swamp was covered by the ocean, all kinds of marine life occurred in this primordial sea. Some of the microscopic animals and plants, such as foraminifera and diatoms, left their skeletons which formed a deposit of sea ooze. The foraminifera (animals with perforated shells) left a deposit of limestone, while the diatoms (microsopic unicellular algae) left their skeletons of silicon. Today microsopic analysis of deposits from the Dismal Swamp, brought up from considerable depth by boring and dredging, reveal the skeletons of these microscopic plants and animals. Also to be seen in these deposits are many species of bivalves, snails, and even the teeth of ancient giant sharks.

The presence of coral in these deposits indicate a warm and quiet sea. The ancient sea floor upon which the Dismal Swamp rests was probably formed during the Miocene and Eocene periods, as these fossil deposits indicate. When the continental shelf was submerged for the last time, approximately 6000 years ago, the ocean receded and left the shelf upon which the Dismal Swamp now rests.

Thus, 6000 years ago a peat swamp began to form. It was at first a shallow pond or lake, with peaty matter destined to encircle it from the margin.

THUS there is found in the center of the peat swamp a small remnant of the original lake, Lake Drummond. The peat accumulated gradually by the annual fall of leaves and branches, and the rate of thickening was therefore very slow. If we remember the antiseptic property of peat, its rate of accumulation is easily understood. If the abundant water is present, a peculiar change takes place by which peat

ROGER DE RAGEOT

Wildlife, such as this barn owl, has found sanctuary in the swamps. The Great Dismal is the home of many species.

is formed. Its antiseptic property prevents complete decomposition, and the vegetable matter accumulates without limit. A peat bog therefore represents the accumulated remains of thousands of generations of plants. The peat is very black, pure, and is from 20 to 30 feet deep. This explains why the surface of the Swamp is decidedly higher than the surrounding countryside.

In peat areas, fire is a constant threat when the soil is dry. There have been some fires of many months' duration in the great Dismal Swamp. These peat areas may burn many feet deep and form real hazzards in some places where unsuspecting persons could inadvertently fall and become buried in the peat ashes.

Flora and Fauna of the Great Dismal Swamp

For 6000 years, ferns, trees and wildflowers have thrived undisturbed in luxuriant growth. Spring and early summer is by far the best time to see the Dismal Swamp. At this time the mosquitoes and yellow flies (*Diachlorus ferrugatus*) have not yet come out in hordes. The leaves which have newly emerged from their buds bear a green freshness, which is only accentuated by the cool everpleasant spring breeze, and one feels happy to be alive just walking into the cool shadow under the archway of greenery.

Birds of the Swamp

At times the great Dismal can be a euphony of many bird songs —especially in spring and early summer. The warblers form the largest group of birds inhabiting this great wilderness. Here the thrill of hooded-warbler, Swainson's and prothonotary arise from the green gloomed alleys echoing into the vastness of nature's temple.

The prothonotary is one of the most characteristic birds of the Swamp. Here one really learns to appreciate the beauty of this golden swamp warbler.

Another characteristic bird here is the pileated woodpecker. This great woopecker was rare eight years ago, but has made an astounding comeback. Once again its call (which resembles a strident laughing) is an integral part of the great swamp.

Many writers on the Dismal Swamp seem too enthusiastic in perpetrating the erroneous belief that the ivory-billed woodpecker occurs in the Dismal. Let me state definitely here that it is very improbable that the ivory-billed woodpecker has been in the Dismal in the last several centuries.

The last of these woodpeckers, which are close to extinction, if not already extinct, was a nesting pair seen in a Louisiana Swamp in the 1920's. Unfortunately, unlike its cousin, the pileated woodpecker, it has been unable to adapt to the advance of civilization.

Another typical member of the avifauna is the barred owl—the voice of the night. Its lugubrious eight hooting notes are a familiar sound of the nigths. The screech owl and great horned owl are also common sounds of the night.

The green heron, the American bittern, the great blue heron, red-shouldered, red-tailed, and Cooper's hawk are also very common in the swamp.

Among the ducks there are two that are real swamp species. They are the wood ducks and the hooded merganser. These two are at home on the canals and ponds of the woodland which seem to be their preferred habitat. Nothing is more spectacular than a male wood duck or hooded merganser swimming in full regalia, its plumage contrasting strikingly with the black, inky waters.

The Dismal also has its share of winter migrants. An occasional migrant, perhaps dearest to the hearts of many bird lovers, is the evening grosbeak. As a rule, however, I must state here that the bird fauna of the great Dismal is pretty much the same as that of the rest of the surrounding country in general.

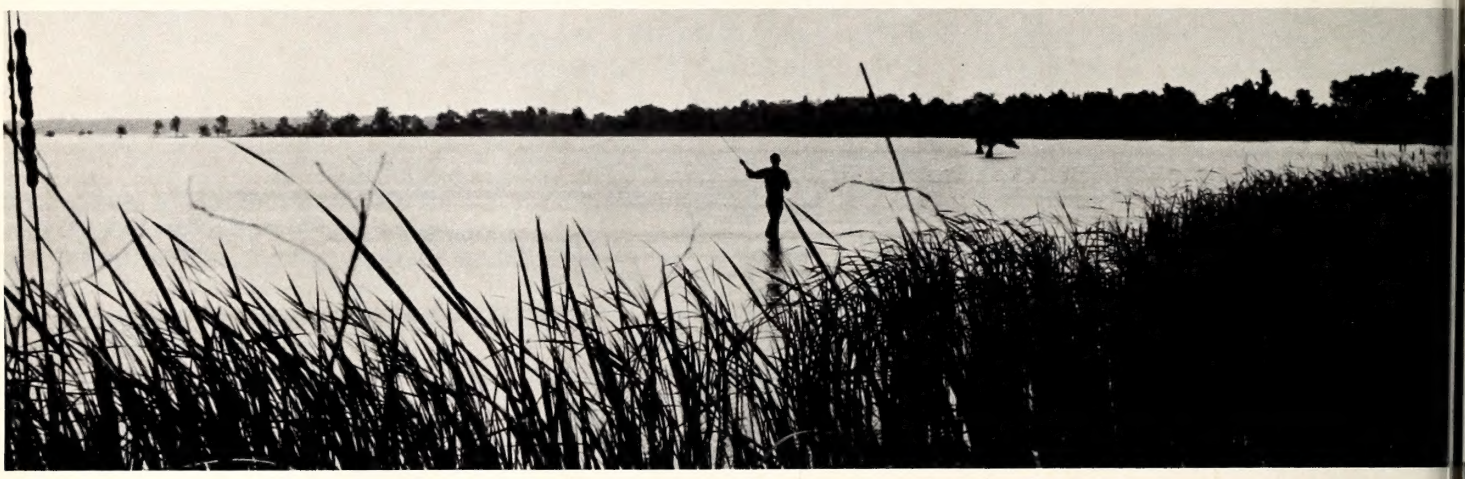
Mammals In The Great Dismal Swamp

In the soft mud one can see the tracks of bears, deer, 'coons, 'possums, wildcats and many smaller beasts. Black bears are still fairly common in this great wilderness.

The bobcat, which has been quite rare for over ten years, is now making a comeback. Not too long ago, two bobcats weighing in the neighborhood of 40 pounds each were captured near the Washington Ditch. Deer are

• continued on page 23

Bass Fishing at Lake Mattamuskeet



by Duane Raver Photos by the Author

THERE'S scarcely an outdoorsman in eastern North America who doesn't recognize the name "Mattamuskeet." But the pictures that scurry through the mind's eye when this Indian name is mentioned are those of skeins of Canada geese wavering over field blinds, of swinging ducks making their way to open water. Seldom do these scenes include bass.

Yet to those who know Mattamuskeet best, the largemouth bass must rate right along with the waterfowl for prime sport consideration. Fishing in this gigantic saucer of shallow, tea-colored water can be fantastic. But this angling must be seen and sampled to be believed. Just to look at Mattamuskeet, fishing might be the last thing to come to mind. Most of the water is shallow—much of it less than two feet deep. Many of these flat areas are choked with vegetation and the mucky bottom is strewn with ancient timber. The lake itself merges with marsh vegetation and the exact shoreline is often difficult to locate.

When the water is low during periods of dry weather, the winds whistle over the surface and stir up the dense organic matter, making the water a soupy, peat-flavored gruel. These are the times that try the souls of the bass fishermen. It is the wind perhaps more than any other single factor that puts the fish "down" and in a strike-less mood. But when the breezes moderate, and the debris settles, the bass go on the prowl again.

WHEN the bass will begin their earnest feeding in the spring is everybody's guess, but many anglers count on early May to produce the best fishing. Whether this peak fishing coincides with spawning is a moot question since elsewhere in the state bass are notoriously uncorporative during spawning. Actually, the fish may begin to feed as they leave the beds (the females) and the males may hit as they guard the eggs and fry. At any rate, the dates for "can't miss" angling at Mattamuskeet generally bracket May 10.

One of the best ways to help insure that you'll be at the right place at the right time, is to have a local contact let you know when good fishing is on. Even then you may get there in time or you may miss it by hours. And since Mattamuskeet is a big place, and not all of it is productive, you'll do well to obtain the services of a guide for the first trip or two. It will surprise you how they pinpoint the fishing spots. These bits of better-than-average angling may be scarcely larger than your living room, and apparently right out in the middle of nowhere.

The guide then, will solve many of your problems automatically. Bear in mind though, he can't make 'em bite! He can get you to them, however, and in vast expanses of knee-deep water, this may be a trick. If the water is low due to the lack of rain or abnormal winds piling it up elsewhere, he will know the trails that get you through the shallow water. The chances are that you could literally walk to the fishing, but it would be a sticky trek!

Once you've covered the water to *"the* spot," you'll hop out of the boat . . . again right out in the middle of nowhere, perhaps some hundreds of yards from anything that looks like land . . . and start fishing. If you're not yet convinced that the water is barely over your knees, check it with a paddle before making the plunge. Waders are in order rather than wading shoes and shorts, since the water is chilly and does have plenty of "shinbusters" scattered about.

IF you've followed the advice of your guide, you are using a substantial fly rod and nothing but popping bugs. You may have guessed this already because of the underwater obstacles that make sub-surface fishing mighty exasperating. It isn't so much that the bass won't hit a streamer or spinner, but that the lure can't travel far before it is adorned with unwanted greenery, or

it's snagged in the middle of some fine fish.

Since some of the casting will be in the neighborhood of 60 or more feet, a nine-foot or no less than 8½ foot rod is generally in order. And since the bugs will often be big, fat ones with plenty of wind resistence, a heavy line . . . preferably a weight-forward one . . . and a tapered leader will help put them out there. Now, this moderately heavy gear can put kinks in the right forearm by dark, so have the tackle as carefully matched as possible.

The reel is up to you, but most of the consistent anglers lean toward the single action as opposed to the automatic. Generally you won't need much backing in addition to the fly line, since by the time the bass has stripped off this much, he's a goner anyway.

A heavy, tapered leader lays the bug out much better than a light one. The taper seems to work better than the level type. How heavy? Plan on taming largemouth from 2½ to 4 pounds, with some large ones thrown in if you're lucky. A 6 or 8-pound tippet normally is enough .

Before you're through, the chances are that you'll have plenty of advice about size and pattern of poppers to use. It's a long walk back to the tackle shop if some of these start to paying off and you're left with your normal stock from home. So, invest in a few of the "pets," just in case.

A landing net may be helpful, but you will see few in use. The thumb-and-forefinger method of bass landing is generally all you will need. Unless you are lucky enough to connect with your limit in short order (and it can be done in a dozen casts), a spare line, well-dressed on an alternate reel will help float the bug during the late hours.

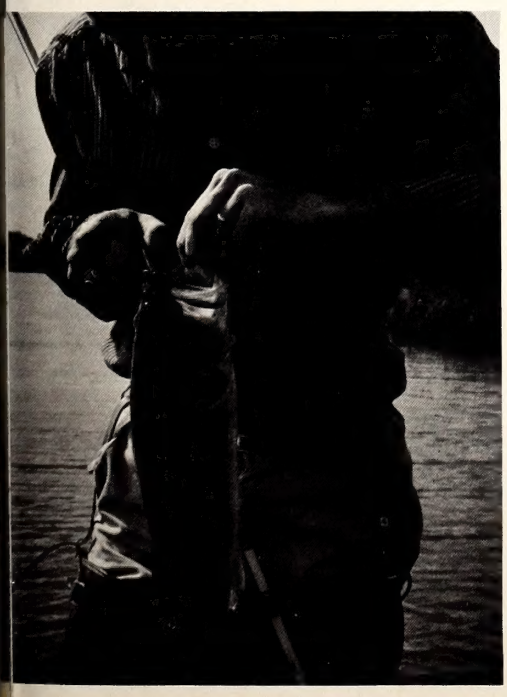
Speaking of hours, you'll do well to be out among the fish by shortly after daylight even in chilly weather. The wind is less likely to bother you and early morning feeding may be it for the day. On an overcast day, even if there is a chop, you may find a sheltered spot that works well during the mid-day hours. Then there are always those dark dusk hours that renew your confidence automatically.

Casting to "something" seems natural to most fly fishermen, and a patch of vegetation floating on the surface makes a good target at Mattamuskeet. There is plenty of shelter for the bass though, even in "open water." How do you fish the bug? Every way you know how, and then invent a few new ways. The point is that each fisherman has his own methods, and most pay off at times. One way is to allow the lure to remain almost motionless right after it lights (some anglers with strong nerves and plenty of patience give it up to 30 seconds!), and then twitch it slightly, rest, another twitch and so on. But this is standard procedure with most top-water bass fishermen, and it works for Mattamuskeet too, so we won't pursue it further here.

THE drainage canals around Mattamuskeet offer some fine sport too. If the wind (remember?) drives you off the lake, look up one of the numerous ditches in the area and try a spinner or standard bass lure there. In the large canal (Lake Landing Canal) opening near the old pumping station, you may find plenty of nice bass, plus white perch and other panfish.

Be sure to check with Refuge personnel before using any of the secondary roads on the area. Keep in mind that this is a National Wildlife Refuge and Federal and State rules and regulations prevail. The Refuge Headquarters is near the lake shore at New Holland, and the personnel here will be happy to give you some tips for a successful stay.

There are some fine motels practically right on the lake, and one or two provide boats and guide service. But as you might suspect, when the bass go on the rampage, fishermen soon fill up the available rooms, so get your reservation in early. Charlie Carawan, New Holland, North Carolina, will be glad to help you. And don't forget to bring some little popping bugs too. Some of the bluegills, why . . . well that's another story. Right now, go on down and catch yourself a bass.



Much of the fishing in Mattamuskeet is done in water less than three feet deep. The results, though, are surprising. Two to three pound bass are the rule, with five-pounders big ones. Outboard motors are often set higher by transom brackets like the one shown on this shallow-draft, square-ended aluminum skiff.

NORTH CAROLINA WILDLIFE

RESOURCE-O-GRAM

A ROUNDUP OF THE LATEST WILDLIFE NEWS

Nine Public Hearings Scheduled for Hunting Rules

The Wildlife Resources Commission has scheduled a series of nine public hearings across the state to give Tarheel hunters a chance to express their views on setting the 1965-1966 regulations for hunting non-migratory game.

Following are dates, places and times (see April, 1965, issue for counties in each district):

May 18	District 9	Sylva	Courthouse	7:30 p.m.
May 19	District 8	Morganton	Courthouse	7:30 p.m.
May 20	District 7	Dobson	Courthouse	7:30 p.m.
May 21	District 6	Albemarle	Courthouse	7:30 p.m.
May 24	District 5	Graham	Courthouse	7:30 p.m.
May 25	District 4	Elizabethtown	Courthouse	7:30 p.m.
May 26	District 3	Rocky Mount	City Court	7:30 p.m.
May 27	District 2	New Bern	Courthouse	7:30 p.m.
May 28	District 1	Edenton	Courthouse	7:30 p.m.

Help Prevent Woods Fires!

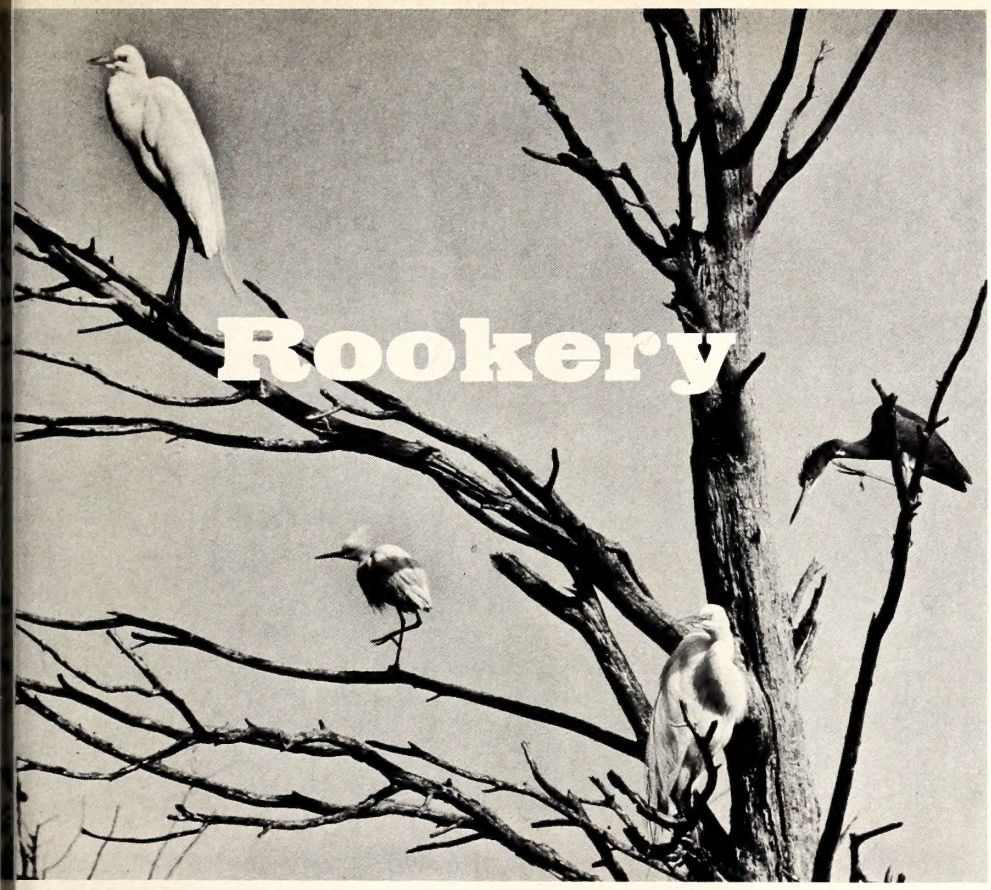
With the fishing, camping and hiking seasons under way, the Wildlife Resources Commission joins the Forest Service in warning people who go out in the wooded areas of the state to be extremely careful with fire. May is usually a dry month in North Carolina, and a protracted dry spell and an outbreak of fires could bring about the closing of forested areas to fishing and other outdoor activity.

Shad Get Helping Hand

Once again the U. S. Army Corps of Engineers will manipulate navigation locks 1 and 2 on the Cape Fear River to allow spawning shad to migrate upstream into a 70-mile stretch of water ordinarily blocked by the dams. The project will continue until the shad spawning season is ended.

Wanted — Striped Bass Eggs

Although ripe striped bass eggs are not as valuable as caviar, they bring $20.00 per million at the Weldon striped bass hatchery. Large females can yield as much as $40.00 worth of eggs. Both net and sport fishermen are requested to bring freshly caught live fish to the hatchery where biologists can remove eggs and milt and hatch the eggs in a battery of hatching jars.

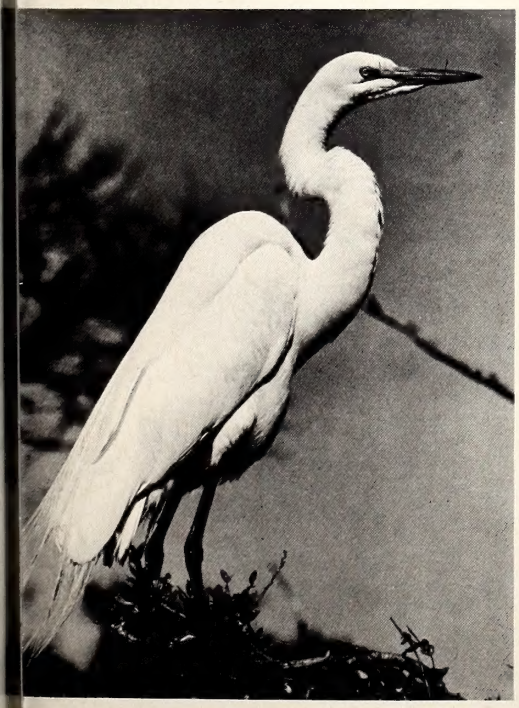


Rookery

DURING most of the year Battery Island lies serenely in the mouth of the Cape Fear River just a few hundred yards from Southport's busy docks. But in early spring it gradually comes to life as a haven for nesting birds. Because of the seclusion it offers and its proximity to bountiful food supplies—the rich marshes and shallow sounds nearby—the island is a busy crowded rookery by late April.

In addition to the conspicuous egrets and herons, you may find willets, oystercatchers, ibises, terns, black skimmers, doves, sparrows, rails and blackbirds single-mindedly performing the annual duties of parenthood. In all, about 20 species utilize the island for nesting purposes, providing a paradise for bird watchers and nature photographers.

Photo Feature by Joel Arrington

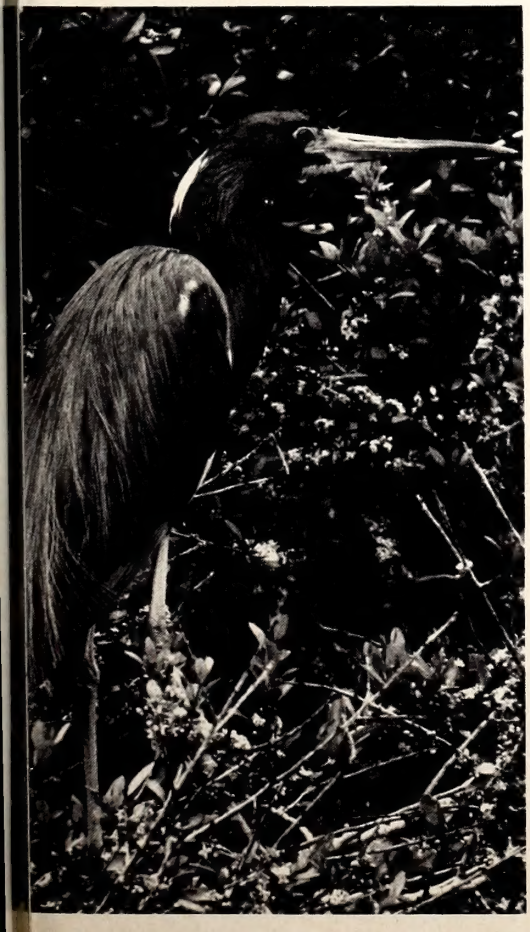


While one Common Egret parent keeps a watchful eye for danger (above), the other feeds their fast-growing youngsters with fresh fish regurgitated from its crop.

Rookery

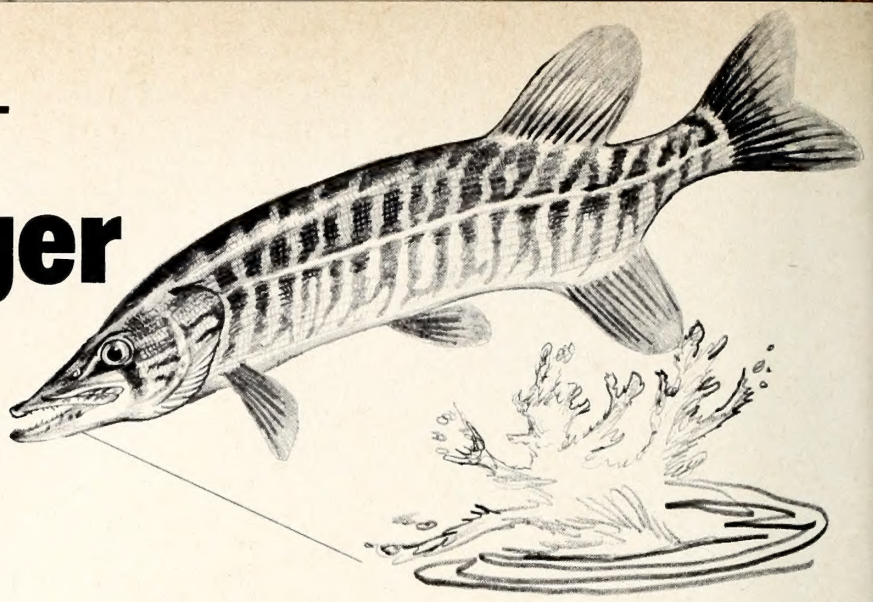
A dainty little Least Tern (above) shields its eggs from the hot sun, and not far away, a pair of Black Skimmers squawk at the photographer's blind (below).

The diet of the Gull-billed Tern (above) is composed almost entirely of insects, unlike other terns which eat mainly fish. Below, a Louisiana Heron perches near its nest in low bushes (left), and a Common Egret family watches while a parent displays its breeding plumage.



Redfin Pickerel—
Tiny Tiger

By Bob Gooch



THE wading angler was far up a small tributary of a meandering coastal plain stream. Equipped with light spinning tackle, he was fishing slowly downstream, taking his time, covering the water thoroughly and enjoying the warm, spring day in eastern North Carolina.

The stream was tiny, but it flowed through an almost wilderness area. The fishing was good—particularly for robin, a favorite of Tarheel anglers.

And best of all, few fishermen bothered to work this choice bit of water. The peace and solitude was of a quality seldom enjoyed on larger, more popular fishing waters. Heavy vegetation crowded the banks. Casting was difficult, but the angler, through experience, had learned to modify the conventional casting methods to cope with the cramped quarters.

Rounding a sharp bend, he came upon a long, narrow pool that disappeared into a maze of vegetation a good stretch downstream. Along one side of the pool, the rotting trunk of a fallen tree lay half submerged in the clear creek water. And a small weed bed stretched out from shore, the crowns of the aquatic plants waving gently in the slowly moving current.

The seasoned fisherman knew what the signs spelled and fastened a small red and white spoon to the terminal end of his 2 pound test line. He had casting room here, and expertly dropped the little spoon alongside the old log. He made a couple of turns of the reel handle. And wham! A miniature explosion disrupted the quiet setting. With a flick of his wrist the angler drove home the well-honed hooks.

THE fight was brief but spirited and the angler soon slid his net under 12 inches of glistening pickerel. It was a beautiful specimen—green body tinged with gold, barlike markings down its side, and soft fins of a striking orange color.

The angler was not concerned by the fact that his prize was only a foot long. Removing the lure from its vicious looking snout, he added the pickerel to his stringer already heavy with a good catch of robin. The angler was elated. His catch was a redfin pickerel, fun to fish for and tops as table fare.

There are also some good chain pickerel in North Carolina, but this story is of the redfin, often called barred pickerel, jack or jackfish. Its scientific name is *Esox americanus americanus.* The redfin is believed to be one of the first New World species to be recognized.

It is one of the two little pickerels, the other being the grass pickerel of the Great Lakes and Mississippi River drainage systems. The scientific name of the grass is *Esox americanus vermiculatus.*

The redfin is the smallest of the pikes as well as being the bantamweight of the three-member pickerel family. It seldom exceeds a length of 12 inches and probably averages around 10.

Like all pickerels its cheeks and gill covers are fully scaled, but the chainlike markings of the chain pickerel are absent and the sides of its dark green body are streaked with bar markings. In some cases the body may be almost a solid gray-green, except for the stomach which is pale yellow or white. A black teardrop extends downward from each eye.

The redfin's snout is shorter than those of the other pickerels, but this may not be evident unless several specimens of both the chain and the redfin are examined together. During the spawning season particularly, its fins are colored a dark red or orange. This may be less pronounced at other times of the year.

One sure way of distinguishing between the chain and redfin is to count the bony rays in the gill membranes. The chain has 14 to 16 rays, while the redfin has only 11 to 13.

LIKE all members of the pike family, the redfin is a ferocious fish and noted for its savage strike. Adult fish feed primarily on minnows and other small fish. Cantankerous and possessed of an evil personality, even a well-fed redfin is not too difficult to chide into striking.

The redfin is a loner and usually a solitary feeder. It does not roam far for its food, preferring to wait in ambush for an unsuspecting morsel to swim by.

Primarily a stream fish, the North Carolina redfin seems to prefer the black, acid waters

of the swampy lowlands. Look for the little pickerel where the current is slow and the stream bottom soft and heavy with aquatic vegetation. It shows little tolerance for water that is not clean and free of silt and pollution.

Small streams appeal to the redfin and these little streams are a delight to fish. It does not seem to like the large bodies of water such as lakes and big rivers, and seldom will tolerate impoundments of any kind. It may share its habitat with chain pickerel, but it has been observed generally this is not an ideal situation. A good redfin stream will not ordinarily contain many chains.

Like all members of the pickerel family, the redfin prefers fairly shallow water.

The redfin pickerel ranges from the St. Lawrence River south to Lake Okeechobee in Florida and west along the Gulf of Mexico to Alabama. It is common in Massachusetts and Connecticut and is found on Long Island in New York. From Maryland to Georgia it is primarily a fish of the coastal plains. It is generally confined to the streams of the Atlantic drainage system.

In North Carolina, the Coastal Plain is roughly that section of the state lying east of a line running from the western tip of Northampton County southwesterly to the South Carolina line in Anson County. This is a huge chunk of real estate and the redfin is likely to be discovered in any of the smaller, clean streams in this area.

While it receives little angling attention in much of its range, the redfin is said to be more popular than the larger chain in Florida and southern Georgia. The reason for this is the fine food qualities of the redfin. In Tarheel country the redfin seems to enjoy most popularity in the southeastern part of the state where he is sought by cane pole fishermen.

everal fine game fish are passd by in our search for sport. ne such fighter is the redfin ickerel. If you've never tangled ith this tiny tiger, it's high me you did. Come on.

LONG ago I discovered that I could probably most closely approximate the excellent fishing our forefathers enjoyed by fishing the smaller streams for native species. Over the years I have also learned that few anglers take advantage of this kind of fishing. Not even the resident fishermen. More than once I have climbed wet and tired out of such a stream and showed my catch to a native of the area. The usual comment is: "I didn't know there were fish like that in that little creek."

The only way to navigate most of these small streams is to get into them and wade. The banks are lined with heavy vegetation and are just about impossible to penetrate. The wading angler gets a little casting room and being close to the water, is less likely to frighten his quarry.

Wading "wet" is possible in warm weather, but I like the protection of chest waders. I also dislike the extended exposure to the cold water in small, well-shaded streams. As an added safety precaution, I like to tow my canvas "bubble." This is an automobile tire tube covered with a canvas rig fitted so the angler can sit in it. I tow this in shallow water, but if the water gets deep, or I am uncertain of my footing, I climb into the bubble and ride with the current. This is one of the reasons I prefer to fish downstream.

This is the inflated, "sit-in float" which took the author in search of small-stream pickerel and panfish.

The introduction of ultra-light spinning tackle may be the innovation that brings the redfin into the limelight.

Ultra-light tackle means a short spinning rod weighing just a couple of ounces, a tiny open-faced reel, a light line and thumbnail size lures. A 2-pound test line is desirable, but if there is heavy vegetation and underwater snags, a 4 pound test may be more practical. Most reels are equipped with two spools, so a good procedure is to fill one with 2 pound test line and the other with 4.

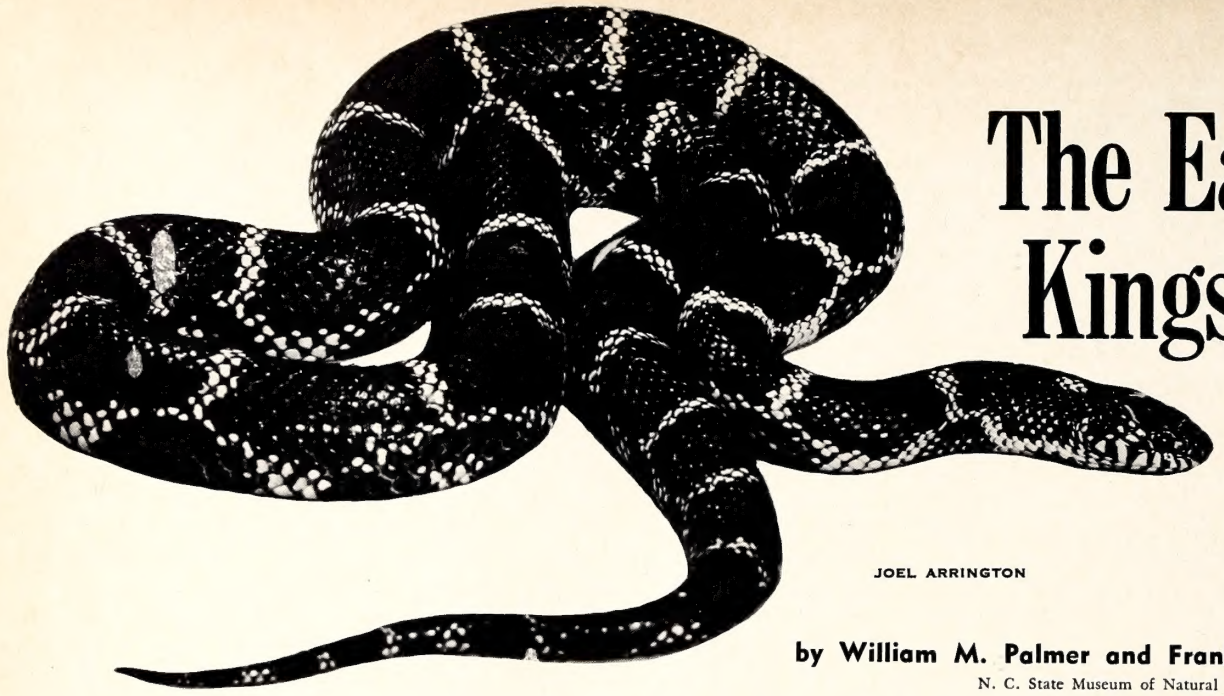
Inch-long spoons decorated with a sliver of pork rind, miniature plugs and tiny spinner-fly combinations will interest redfins as well as other small stream gamesters. The spinner-fly combination is a good bet if the stream contains a variety of desirable fish. On the other hand the spoon-pork rind combination is hard to beat for pickerel.

The redfin has a mouth filled with sharp teeth, but they do not seem to damage the very fine spinning lines. I imagine the monofilament slips between them. In any event, wire leaders and snap swivels are out of place in these light outfits. They spoil the action of the tiny, sensitive lures. The lure should be fastened directly to the line. Some line twist can be expected, but I have never considered it a problem.

As is true of most of the pikes, the redfin likes a fairly fast retrieve, but if the action is slow it pays to experiment. Small surface lures can be fished slowly in the manner so effective for bass.

A string of redfins will probably average a little less than 10 inches in size, though some may go to 12 or 13 inches. A 15 incher is a lunker!

It is in the pan that the redfin excels. Taken from the cool, clean waters of our small streams, its flesh is firm and sweet. In the past this has been the primary reason for the redfin's popularity. But the little pickerel is a gamester also and on ultra-light tackle he can prove it!



JOEL ARRINGTON

The Eastern Kingsnake

by William M. Palmer and Franklin F. Snelson, Jr.
N. C. State Museum of Natural History

ONE of the most attractive and generally best known of all North Carolina snakes is the colorful eastern kingsnake, *Lampropeltis getulus getulus*. Easily identified by its shiny black color with prominent chain-like white or yellow rings, this conspicuous species is seldom confused with other snakes. It is famiilar to most persons who have had the occasion to spend much time in the out-of-doors. An authentic maximum length of nearly seven feet has been reported, but most specimens from North Carolina average only about three or four.

The eastern kingsnake ranges from New Jersey to central Florida and west into extreme eastern and southern Alabama. In North Carolina, with the exception of the higher mountain elevations, this species is distributed throughout the state.

A wide variety of habitats is utilized by this species; however, a close proximity to water apparently is a major requirement. It is most abundant in several areas of the Coastal Plain, and from the Green Swamp of Brunswick and Columbus Counties, and the extensive pocosins of the Albemarle-Pamlico Sound Peninsula have come many fine specimens. These snakes continue to be observed in numbers about abandoned sawdust piles, wood lots, dismantled houses, and grain storage shelters, especially if these sites border a lowland area, lake, stream, or river. In such localities, kingsnakes are most often found hiding beneath boards, logs, scrap pieces of tin, or similar cover. Paved roads through suitable habitat often attract snakes seeking the warmth of the pavement. It is unfortunate that with the advent of the automobile has come a wholesale slaughter of this and many other beneficial snakes, the great majority of which are intentionally run over by thoughtless motorists.

Contrary to popular belief, the kingsnake is not a sworn enemy of venomous snakes and does not actually seek out these dangerous species. However, the eastern kingsnake is a notorious snake-eater, being immune to the venom of such forms as the copperhead, cottonmouth, and the rattlesnakes, but it feeds indiscriminately upon both harmless and venomous snakes alike. Other preferred food items are lizards, reptile eggs, mice, rats, and other small mammals. Struggling prey is quickly overcome by powerful constriction.

Mating takes place in the spring and up to two dozen eggs are laid in June and July. Rotting stumps and logs, sawdust piles, and similar places form ideal nesting sites. Hatching occurs in the late summer or early fall. Hatchling kingsnakes are small when compared with the young of other moderately large snakes, being only about nine to twelve inches in length. The scarcity of hatchlings and young apparently indicates that juveniles of this species are much more sensitive than the adults.

When first captured, the kingsnake, utilizing its only means of defense, will usually attempt to bite, but this hostility is short-lived. Almost instantly it becomes docile and appears to actually enjoy being handled. When kept in a clean, dry cage, these snakes make delightful pets. Specimens readily consume any of the food items previously listed, either alive or freshly-killed. There are several authentic reports of captive examples which ate strips of raw beef. Kingsnakes properly cared for in captivity grow rapidly and may live for ten or more years.

Certain of the rat snakes, the pine snake, and the kingsnake are among the most efficient predators upon small rodents. The kingsnake also feeds to some extent upon venomous snakes and is very fond of turtle eggs, especially of the different species that often plague the live-bait fisherman. In addition, the bright coloration, gentle disposition, and voracious feeding habits have made the eastern kingsnake a favorite of budding young naturalists keeping live snakes as pets.

• **Next Month**
YELLOW-LIPPED SNAKE

Free-running pets—dogs and cats — often menace game populations. Conservation should begin at home.

The Free-runners

by S. Thad Cherry

THEN there was silence — complete, total silence. A stethoscope picked up the last sporadic heartbeats of the dying form on the stainless steel operating table. The oxygen tank was turned off, and the tube was removed from the mouth of the now lifeless fawn. The veterinarian stepped back from the table, wiped his brow, and commented, "A shame, a real shame." And a shame it was indeed.

Even in death, the little fawn buck was a beautiful creature. His reddish-brown sides were patterned with typical white "fawn spots." Long black eyelashes curled above large, beautiful brown eyes. But his beauty was marred by the evidence of his last struggle with some of the most cruel misfits in nature. Open wounds on his hind quarters still trickled blood. All four legs were covered with cuts and tooth imprints. His jaw was broken, and his nose trickled blood. All 30 pounds of the little buck fawn showed repulsive signs of a terrible physical ordeal.

How many times have you slammed on brakes to miss a cur dog, or a gang of dogs, streaking across a highway in the summertime? How many house cats have you seen crouched alongside the highway at night? Did you ever stop to think what their presence probably meant? Were those dogs just in a hurry to get home for supper? Were those cats just out for a leisurely evening stroll?

Wildlife Lost

It would be astounding to know just how much wildlife is lost every year to these supposedly domestic animals—the dog and the house cat. Both, given the opportunity, will yield to their natural instincts of predation. Of course, some natural predation can be beneficial to wildlife. It has often been called a "necessary evil." But no true sportsman or lover of wildlife likes to think of free-running dogs or house cats as natural predators.

It is amazing how many so-called deer hunters allow their dogs to run free all year. "Let 'em catch a doe or fawn or two this summer—makes 'em really good deer dogs come winter." "Yes, I let my hounds run year-round—keeps them in good shape . . . don't know why there's never been any deer in this section."

And it is amazing how many cat owners don't know the true instincts and habits of their beloved felines. "Tom wouldn't dare hurt a bird or rabbit. He just lies around on a window sill and sleeps all day . . . . I don't know how that cat stays so fat—he just won't eat cat food." The truth probably is that Tom, like most cats, has perfected his inborn abilities of nocturnal predation. And what cat would mess up his mouth with a glob of canned cat food after an evening meal of spring rabbit, especially when prospects are good for a repeat performance with the coming of dusk.

And then there are those people who turn loose unwanted puppies and kittens alongside the highway. Many of these puppies and kittens have enough natural instinct to survive, and become proficient at wildlife predation. Often, abandoned litters of puppies survive and are joined by others to form packs of wild dogs. These packs become real specialists at gang predation, and often attack livestock when wildlife becomes scarce. There are many such packs of wild dogs throughout North Carolina.

Where Is The Game?

Why is it that there are usually large populations of deer, quail, turkeys and rabbits, as well as other species of wildlife on military reservations, state parks, and wildlife management areas? The reason is, of couse, that these are protected areas. Game regulations are rigidly enforced, and, perhaps equally important, free-running dogs and cats are picked up and disposed of according to law.

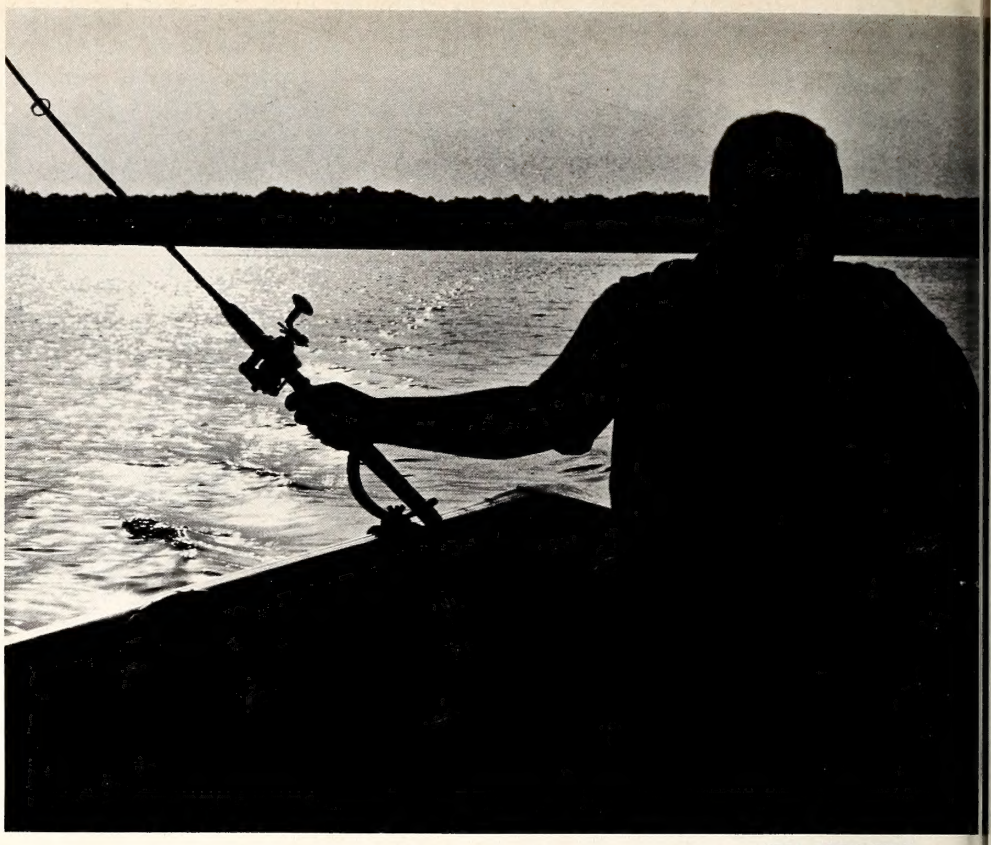
North Carolina would become a utopia for wildlife and lovers of wildlife if we were able to overcome our problem of wildlife predation by our so-called domestic animals. And it is OUR problem —the problem of every North Carolinian. Each of us can do his part. Conservation-minded dog owners should keep their dogs in pens or on chains during the critical months of spring and summer reproduction, and urge other dog owners to do likewise. Many cat owners realize the uncontrollable natural instincts of their felines, and restrict their numbers to a minimum. It is amazing how a cat's home appetite will pick up if he is fitted with a collar which sports a clear-ringing bell. Unwanted puppies and kittens should be humanely destroyed.

It is a fact that public resentment to free running dogs and cats is growing. Perhaps, in the future, this resentment will grow until some large-scale positive action is taken. But until that time, we will still notice the ever-increasing number of free-running dogs and cats as we travel the highways, and we will begin to realize what their presence means to wildlife.

Perhaps some day we will come upon a mangled fawn, left near death by mongrel dogs. As we listen to its pitiful cries of pain, we might realize that we have so far ignored another moral responsibility to one of our most valuable gifts of nature—our wildlife.

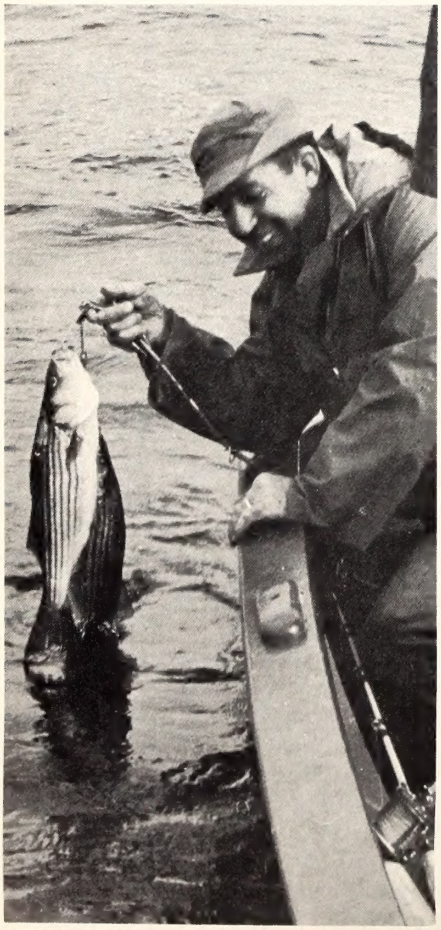
Kerr Reservoir Stripers

by Frank Mooney



JOEL ARRINGTON

The author waits for the jolt and the zizzz of the reel that means only one thing: striper on. The results may be a beauty like the one at right.



YOU can cast into the waters of Kerr Reservoir with every expectation of tying into 10 or 20 pounds of striped fury. The rockfish or striped bass is fast becoming a rock-ribbed favorite with Kerr Reservoir anglers. Its willingness to fight, and its habit of consuming great quantities of food are two of the main reasons for his popularity. He is also one of the most temperamental cusses you'll ever meet.

His diet consists almost entirely of small fish with gizzard and threadfin shad high on the list. His growth reflects his appetite—about two new pounds of fighting weight annually. Yet at times no matter how hard or how long you fish for him, it's to no avail.

One of the best times to hit the striper is when schools are descending the Reservoir tributaries after spawning. This is usually the last of May, but it may be earlier due to unusually warm weather. The first fish last year was caught around the middle of May. As they congregate at the mouths of streams, most any bright or shiny lure will take them. After returning to the main body of the lake they are restless and move in rather large schools. That's the time when most fish are caught in open water and down deep. If you can locate a spot where they feed this time of the year, it usually pays to check it often. For the successful rock fisherman, persistency is a key asset.

One of the most exciting times to catch rockfish is when they are chasing and driving shad to the surface. While they are cutting into the shad, almost any lure you cast will catch them. Watching them almost makes you want to jump in and join them! When they are on the surface, getting close enough to cast is the problem.

Fall and winter months are also good times to fish. The weather never gets too bad for the fish—just for the fishermen. I have caught them when the temperature hovered around

JIM LEE

Want a place where you can be assured of a twenty-pound striper every trip? The author doesn't believe that such a spot exists. There are few short-cuts to big striped bass—in Kerr or any place.

freezing, with rain falling.

Trolling is the most effective method to consistently take the big stripers, although they are also caught by casting with artificial lures, live bait and cut bait. Most fishermen use a trolling weight about three feet above the lure. A variety of lures are used, but the floating type with a large metal lip seems the most productive. A metal core or leaded line is the best for trolling but the separate weight is used more frequently. Leaded line does not hinder the action of the lure like a trolling weight. The most popular rig is a deep diving plug tied about three feet behind the trolling weight. Some attach a three-way swivel and use a spoon or bucktail in addition to the plug. Varying the speed and direction seems to help at times. Trolling in a figure "S" causes the lure to dive, dart and change speed.

When trolling for rockfish, I use a faster pace than for other fish; the striper will turn the power on to get his meal. Putting out 300 feet or more of line usually pays off when trolling in the main channels where the water is 40 feet deep or more. It takes a lot of line to get the "message" down to them. Rockfish are mostly bottom feeders, preferring deep holes with a rocky bottom. The weight of the trolling lead depends upon the depth of water and trolling speed. Most of the time it pays to keep the lure as close to the bottom as possible; I prefer about 12 inches above the bottom.

It takes a rod with plenty of backbone because you're handling a lot of weight, in addition to some hefty fish. Another requirement is a reel with a star drag and large line capacity. Thirty or 40-pound test line is the best. For trolling the best time is four hours after daybreak, four hours before dark—and anytime they are chasing shad!

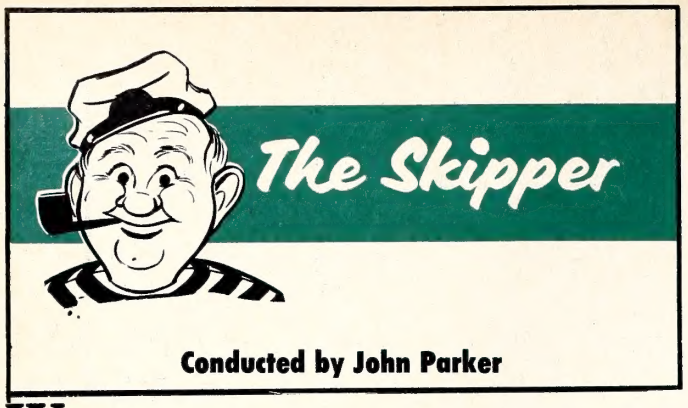
A friend from Roxboro and I put in at Occoneechee Park one morning around 4:30. It had been raining most of the way to Clarksville with promise of more to come. About five, we got our lines in the water. It wasn't long before it started raining again. While the motor was cut and my deep-running lure was freed from a snag, we squirmed into our rain suits and settled down to a damp ride. We were trolling in the main channel near a log jam and snagging was real easy; it didn't take any effort at all on our part.

My watch read twenty minutes of six when my waterdog and spoon started scratching bottom. I raised the rod tip hoping the lure would keep working and not hang. "Hung up," I said, starting to put the outboard in reverse and go back for my plug when the rod started bucking. Lots of u n c o m f o r t a b l e things run through a fisherman's head in the first few seconds after a fish is hooked. "Is he hooked solid? Will he get around a stump or log? Will the hook tear out? Does the line have a weak place?"

Knowing the fish was about 300 feet away from the boat, I cranked the handle as fast as I dared. Finally after sweating and reeling I worked him close enough to holler "get the net." There are three words I really enjoyed saying! A fish looks larger before you get the net under it than any other time. An old man once told me "fish sure do grow faster on the bank than in the water when some people catch them."

Just as the net started under the fish he made a lunge under the boat but he was too worn out to compete with the stiff rod. I breathed again when the net scooped him up. The hand scales read better than 12 pounds. The striper measured 31 inches—too long for the ice chest so I sat there in the rain admiring its beauty and wondering where to put it.

We trolled several hours without any more luck. After stopping to eat, we cast a few minutes and boated a largemouth bass of about two pounds. It was close to 12 o'clock so we decided to call it a day. Next time? Maybe a 20 pounder, a string of 10-pounders, maybe nothing. That's the way with Kerr Reservoir stripers.



Conducted by John Parker

WE can safely say that boating will get into full swing during the month of May. And we would hope that the boating picture, as it continues to evolve and as it grows toward its annual maturity in late summer, will do so in an atmosphere of safety and courtesy.

Actually the boating season never quite ends in the state as a whole. Although the entire water traffic picture changes abruptly in late summer or fall and some bodies of water do become still once again, one would not have to search too far to see a boat or at least to hear the hum of the motor somewhere out on a lake or sound. Perhaps the operator makes his living with his boat or perhaps he is heading toward a favorite hunting or fishing area or perhaps just cruising.

Regardless of his purpose of being there or the time of year, all boaters have a common interest in staying safe. One thing that will help us in staying safe, even in emergency situations, is proper safety equipment.

What's proper may or may not be the same as what's legal. In other words, you may want to go the law one better. This boater believes that the boat that meets only the legal requirements is poorly equipped. But optional equipment is another story, and one on which all boaters may have different views. I would suggest, however, that you take a close look at one of the long lists of suggested equipment and decide if maybe your rig could use a few additions. Since most boating equipment serves some form of safety, you may find that there are some safety gaps aboard. Even a sponge can make your boat safer, especially if it's used to wipe up an oil spill.

There have been a few changes concerning safety equipment which will be of interest to you. Most of these changes became effective in January of this year, but probably did not affect you directly if your equipment was in good shape in the first place. A look at the first change will serve to explain what I mean.

As of January, 1965, all kapok and fibrous glass-filled lifesaving devices which did not have the flotation material encased in heat-sealed plastic bags are unacceptable as Coast Guard approved lifesaving equipment. This means that if you have lifesaving equipment that is so constructed (not having the kapok or glass, plastic sealed), even though it was originally approved, it is now time to replace it.

Equipment must be in good condition as well as Coast Guard approved to pass inspection. Good condition means that the device has all of its original straps and tie downs, that the covering is not rotten, that it is not gasoline or oil soaked, or water logged, etc.

Ski enthusiasts will be interested in learning that the Coast Guard will now accept *certain approved* ski belts or vests as the lifesaving devices for those occupants or complete boating parties who are obviously engaged in skiing. This should not be misconstrued to mean that small children and great-grandmothers are skiers. For them and others aboard (nonskiers) there must be available standard approved lifesaving devices such as bouyant cushions or life jackets or vests.

This change has probably come about because of the fact that most skiers are good swimmers. Further, it was probably felt that ski equipment will serve the skier satisfactorily where it might not serve safely just anyone who might unnexpectedly find himself in the water.

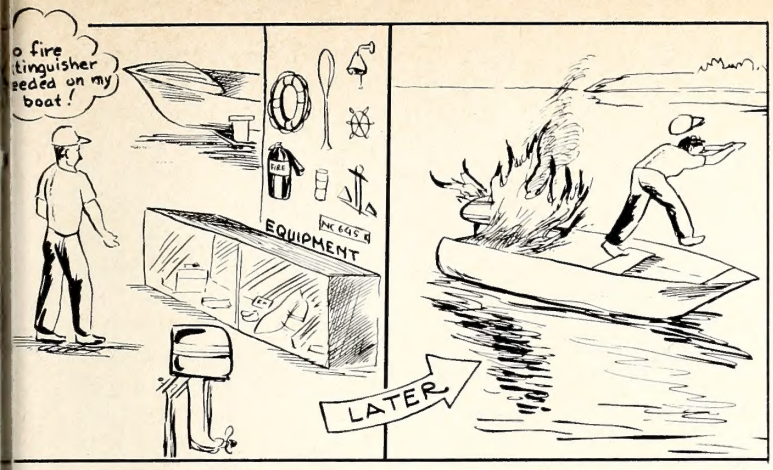
Although approved vest and ski belts should be appearing on the market by now, I for one, would strongly suggest that you find room in your boating budget for the best in conventional life jackets for all aboard.

As of June 1, 1965, dry chemical fire extinguishers that do not have a gauge or other pressure indicating device will no longer be approved. Here again, this means that if you already have the old type extinguisher and it was originally approved and is in good shape and properly filled, it is acceptable and fills the requirement. But it would be useless, insofar as regulation compliance, to purchase a fire extinguisher now that does not have the pressure indicating device because they will no longer carry the approval tags as did similar models which were placed on the markets at an earlier time.

The vaporizing liquid type of fire extinguisher, such as those that use carbon tetrachloride, have not been approved since 1962. The reason being that noxious fumes develop when the liquids come in contact with hot metal. As we understand it, some fire fighters have been killed from these fumes.

Here is another point concerning the above: It is not against any law, except the law of common sense, to use or to have your boat equipped with the liquid vaporizing type of extinguisher if that boat is not required, due to length or construction, to have an extinguisher aboard in the first place. You be the judge.

Why do changes come about in equipment requirements? Because people who spend a lifetime on the water, people who are experts in the testing of marine equipment both in laboratories and afloat believe that these changes will do the job better. The Coast Guard, assisted by testing organizations, and boating groups, make these changes and the various states most often adopt and enforce the changes along with the Coast Guard. They are not interested in selling new equipment but are in-



terested in saving lives and property. Boating safety is one of the major interests of state and federal boating officials. And it should be pointed out that the safer any public activity can be kept, the less rigid the control that is required. Therefore, it would behove those few boaters who spend time dodging responsibilities to utilize that time in figuring out how to work their legal and practical needs into their boating budget.

You can bet your spare propeller that those heros of history who went down with their ships would have welcomed the chance to have stayed afloat with a highly efficient life jacket or to have fought a galley fire with a modern fire extinguisher.

DISMAL SWAMP

• continued from page 9

plentiful and roam the extensive canebrakes.

Three shrews, the little shrew, the Dismal Swamp short-tailed shrew, and the fisher shrew, inhabit the swamp thickets. The Dismal Swamp short-tailed shrew is semiaquatic and has never been found outside its swampy environment. Both this species, and the fisher shrew are restricted to the Dismal Swamp and are found nowhere else.

Seven bats are found in the swamp. They are the keen bat, the Indiana bat, the silver-haired bat, the pipistrelle, the red bat, the evening bat, and Leconte's big-eared bat.

The lemming mouse is a mountain species absent from the lowlands except in the Dismal Swamp. It is a cyclic mammal which may be very common for one or several years and very scarce the next. A brief summary of the other mammals of the swamp are as follows: eastern gray squirrel, southern flying squirrel, b l a c k rat, harvest mouse, rice rat, golden mouse, white-footed mouse, cotton rat, muskrat, meadow mouse, cottontail rabbit, marsh rabbit, gray fox, otter, mink, New York weasel (not common), star-nosed mole, common mole.

Perhaps most interesting of these mammals is the golden mouse. Although it has been known since the time of Audubon and Bachman, little has been written about this little rodent.

The world of the golden mouse is a three dimensional one—length, width, and height, in and among the branches of trees and bushes, since it is mostly arboreal. During its climbing activities its tail, which is at least semiprehensile is coiled around twigs as an aid to its climbing activities. It builds an attractive bird-like nest made of wood fibers, and interwoven cane leaves. This little masterpiece of architecture is most often placed in a cane thicket.

Rumors of the presence of the puma, or panther, roaming in this great wilderness are, of course entirely groundless.

Fishes of The Dismal Swamp

Many an angler, young and old, has looked forward with eager anticipation for a day in the Dismal with a fishing pole in search of the catfish and other delicacies to be found in the deep amber water, to return home in the evening with a string of yellow bullheads, and pumpkinseed sunfish. There is nothing like delicious fresh catfish after a long day in the great woods.

Next to hunting the bears, deer, wildcats, and other smaller game, fishing is the favorite occupation in the Dismal.

The fishes found in the Dismal Swamp include: the bowfin, black bullhead, yellow bullhead, white catfish, eel, mud minnow, banded killifish, mosquitofish, redfin pickerel, chain pickerel, chubsucker, golden shiner, pirate perch, black crappie, mud sunfish, flier, bluespotted sunfish, warmouth, pumpkinseed, yellow perch, swamp darter and fish of the Dismal Swamp.

The most interesting scientifically is the last one—the fish of the Dismal Swamp. This fish belongs to a family whose members live mostly in mountain caves. The dark waters of the Dismal Swamp certainly offer a habitat very similar to that of a cave. Since the eyes are very rudimentary, the Dismal Swamp fish detects its food (which consist primarily of small crustaceans) mostly by touch.

This interesting little f i s h which is little over an inch long has been getting scarcer every year and may be on the verge of extinction. It can be considered one of the oddities of the natural world of the G r e a t Dismal Swamp.

It has been written time after time that the amber waters are so acid as to be almost devoid of fresh water fauna and flora. I have found this to be far from the truth. Not only does the Dismal Swamp water contain a flora and fauna, but I have found it to be quite rich and varied, excluding fresh water mollusks. Freshwater crustaceans and algae abound during certain periods. At least four species of the fresh water crustaceans still need scientific naming, as well as one species of leech.

The Dismal Swamp is an interesting place, rich in most groups of plants and animals. It is an area where some southeastern plants and animals reach their northernmost distribution limit. The cottonmouth is an example. The geographical location of the great Dismal is at a point where North and South meet and this alone is enough to make it a place of unique interest. It is a paradise for hunters, fishermen, bird watchers, nature lovers and other students of woodlore.

CRACK SHOTS and BACKLASHES

DEPARTMENT OF LETTERS TO THE EDITORS, FIELD NOTES, AND ITEMS OF INTEREST

Conducted By Rod Amundson

Tarheel hunters are being asked to help the Wildlife Commission get an over-all picture of the 1964-65 hunting season. Biologist Andy Weber of the Division of Game mailed out 10,000 questionnaires after the close of the quail and rabbit season to learn who went hunting where, for what, and how many of each game species were bagged.

This sample amounts to only about two percent of the total of roughly one-half million hunters who bought licenses in North Carolina during the last season. The results, however, after being totaled and analyzed statistically by the unbiased and amazingly efficient faculties of electronic computers, provide a quick and highly accurate picture of the hunting situation in the state for the past season.

People who received the questionnaires were asked to indicate the number of hunting trips they made, the county or counties in which they hunted, and the kind and number of game species bagged. This is the first year that the location of the hunting has been asked for. From this category, hunting efforts and kill in various parts of the state can be determined. Recipients are not asked to sign their names, a factor calculated to encourage honesty and provide realistic information. Machine data processing units are used after three weeks to determine how many recipients have not returned their questionnaire. A second mailing reminds this group; after another check, a third mailing will go out to encourage the greatest possible return. The more participation in the survey, the more accurate and meaningful will be the results. It looks as if this year's return will better even last year's record high of almost 75 percent.

Frank Barick, Division of Game Chief, reports that he is well pleased with the survey returns thus far, particularly from questionnaires mailed to people who could not fill them out because they had not hunted. This included former residents that moved and others who were unable to hunt because of ill health or the press of business. The normal expectation would be for most of these questionnaires to be tossed in the waste basket. A bulging file of mail indicates a tremendous and growing interest on the part of Tarheel sportsmen in the wildlife resources of the state. Although the questionnaires had space for comments, many of the return envelopes also had lengthy notes or letters expanding upon their comments and expressing gratitude for the work being carried on to improve hunting and fishing.

Such opening statements as, "It is an honor to participate in your survey . . .," "It has been a pleasure to help you on your survey . . . ," and "I am very sorry not to be able to help you as I was sick last year and could not hunt any, but bought a hunting license to help out anyway . . ." set the tone for the reaction of most sportsmen to the survey.

The second mailing to those who failed to return the questionnaire will have been delivered by the time this publication comes off the press. If your name is on the list, take a few minutes time and help the Wildlife Resources Commission complete this vital aspect of game management.

Plan To Aid Ducks

Farmers and ranchers hold much of the future of North America's waterfowl on their lands, according to the Wildlife

Better hunting may depend on complete kill records. Will you help?

A drained marsh often yields very limited returns and may actually upset Nature's scheme. Retention of valuable wetlands will help ducks.

JACK DERMID

Management Institute. The bulk of the continent's ducks nest and rear young on private lands and what happens to marshes, potholes, and other wetlands will directly affect the abundance of birds in coming years. How many wetlands there will be depends on the landowners.

Knowing that a landowner will respond to sound economics, farmer-hunter Jim Thompson of Windom, Minnesota, has devised a lease plan that justifies the retention of wetlends on his farm for waterfowl purposes. He determined that the decision whether to drain or not to drain a 37-acre marsh on his farm should be based on the economic gain to be made from the land. Studies showed that the land, if drained, would give him a net gain of $2,000 in value over costs. Using 4 percent, rather than the national average of 3 percent, for return in farm land investment, Thompson calculated the land should produce $80 return annually. To this he added taxes, posting and weed control, and other expenses and arrived at a total of $150. He then offered, and found ready takers in five hunters and their sons, to lease the undrained land for $150 a year. In addition to having exclusive hunting privileges, the hunters were given the right to plant and otherwise improve the marsh for waterfowl. Fur-trapping rights, which Thompson believed the hunters should have, but which they refused added another $150 to Thompson's return, giving him $300, twice the amount necessary to keep the marsh from being drained.

Jim Thompson is preparing another 28-acre marsh for lease next year. He knows that his plan is not the whole answer to preserving North America's waterfowl. In fact, there is no single answer other than the fact that it will take the combined efforts of all interested people, whether they be individual landowners or employees of State and federal wildlife agencies. The important point is that Jim Thompson has expressed his personal interest and has taken a step, which, if followed by other landowners to preserve wetlands habitat, could mean much to waterfowl.

Thompson's plan deserves study by those agricultural economists who heretofore have viewed drainage as the principal means of handling wetlands.

"Soft" Detergents

Detergent industry production will be fully converted to the new LAS-based ("soft") detergents by June 30, according to John P. Moser, vice-president of Lever Brothers Company and president of the Soap and Detergent Association.

Welcoming 400 industry executives to the Association's 38th annual convention in New York City on January 28, Moser pointed out that $100 million had been invested to provide the new LAS material and the change-over will be completed six months earlier than first predicted. The Association estimates that the conversion to "soft" detergents involves about four billion pounds of finished product annually and required a research and development program extending over ten years.

The new LAS material will lessen foam in sewage because it is more readily broken down by bacteria. The older ABS-based material has not been biodegradable. Moser cautioned, however, that there would not be an immediate end to the appearance of foam in waste discharges. Foaming can be traced to a number of causes, both natural and man-made. He said that, in time, episodes of foaming traceable to detergents will be rare, except in cases where treatment is inadequate. "This industry pledges itself to continuing studies in the interest of our water resources and will be concerned with the progress of constructive environmental health programs, not limited to the use and disposal of its own products," Moser said.

Cross-Bow

DEAR SIRS: I would like to know why it is against the law to hunt with a cross-bow. I enjoy hunting and always like to try something new. CHARLES UNDERWOOD, BRYSON CITY

Cross-bows are generally considered to be a poacher's weapon. It is extremely powerful, accurate, and silent, and is in a class (where taking game is concerned) with snares and poison. —Ed

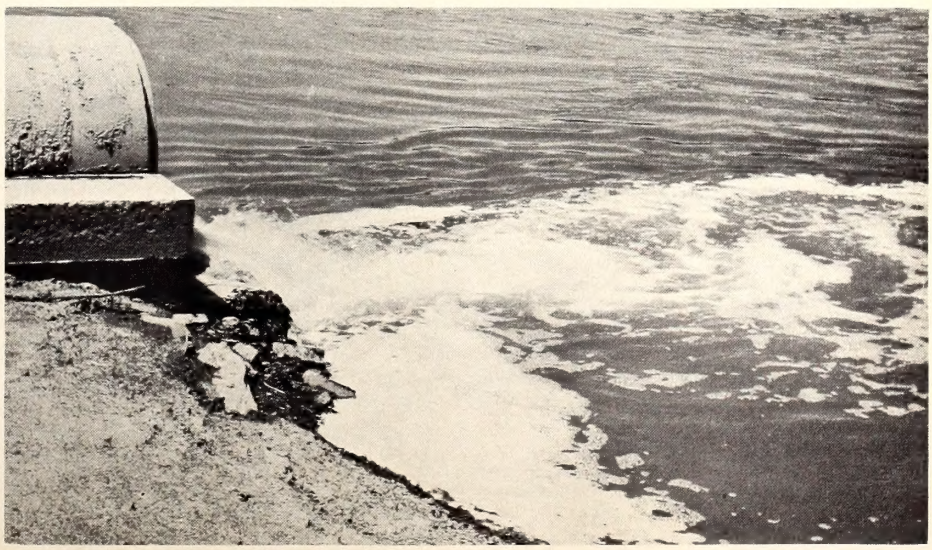
Carp

DEAR SIRS: I noted in last month's *Wildlife* that you had two good recipes on carp bait, and I am very interested in them. I would like to know if you have a book on carp bait. If you have any more information on carp dough bait, I would appreciate it very much if you would send it to me. JERRY HOOKES, CARTHAGE

We don't know of any book on the subject. Maybe someone else does.—Ed.

Look familiar? Perhaps some pollution will always plague us, but an answer to the detergent foam problem appears very near to reality.

JACK DERMID



KNOW YOUR PROTECTOR

Joe W. Goode

Wildlife Protector Joe W. Goode of Albemarle, North Carolina was born on August 18, 1935. His parents are Mr. and Mrs. Earl G. Goode of Lincolnton, North Carolina. Mr. Goode is a graduate of Lincolnton High School. Joe served two years with the U. S. Army and was employed by Ervin Construction Company prior to his employment with the Wildlife Resources Commission.

Mr. Goode completed the Pre-Service Training School for Wildlife Protectors at the Institute of Government in Chapel Hill in June of 1961, and was employed as a Wildlife Protector Trainee in November, 1961, stationed in Stanly County. Since his initial employment he has completed four In-Service Training Schools.

Mr. Goode is a member of the Southeastern Association of Game and Fish Commissioners. He is married to the former Helen S. Shull of Cherryville, North Carolina and at this time the Goodes reside in Albemarle, North Carolina.

DIVISION ENFORCEMENT RECORD FOR NOVEMBER, 1964

HUNTING & FISHING

Persons checked	33,540
Total prosecutions	887
Total convictions	859
Total cases not guilty	13
Total cases nol prossed	12
Total cases dismissed	4
Total Fines collected	$7,271.60
Total Costs collected	$5,948.25

BOATING

Boats checked	494
Total prosecutions	15
Total convictions	14
Total cases not guilty	0
Total cases nol prossed	0
Total Fines collected	$ 59.50
Total Costs collected	$ 108.00

All fines and any arrest or witness fees are paid into the school funds of the counties in which the violations occurred, and no part of the fines or costs collected are paid to the North Carolina Wildlife Resources Commission or its personnel.

Help Wanted

DEAR SIRS: For the last 10 years our school has participated in a stamp contest. The school which achieves the highest amount of points per person in the school is awarded one hundred dollars at the end of the year. The chief stamp to be collected is the Duck stamp (25 points each).

The stamps which these schools gather are sent to the Jesuit priests at Woodstock, Maryland, who in turn send it to stamp collectors for sums of money. This money is then sent to missions all over the world.

Recognizing your title, as it was brought to my attention by Mr. George Shields, Director of Maryland state game and inland fish, I feel confident that you might be able to obtain some Duck stamps for me. Your help would be greatly appreciated. MICHAEL RALEY, ST. MICHAEL'S CIVICS CLUB, RIDGE, MARYLAND

Nice Bass

DEAR SIRS: On Sunday, March 7, I caught a bass out of the Catawba River that weighed 8¾ pounds. It was 24¾ inches long and the girth was 19 inches. I was curious as to the age of this fish and was told that if I send you folks a couple of scales that you could tell me. BLAKE H. STEPHENS, JR., CHARLOTTE

Biologist Darell Louder "aged" the scales. The fish was eight years old.—Ed.

Difficult Problem

DEAR SIRS: I was quite shocked to note the pictures on page 21 of the February issue of *Wildlife*.

We here in Henderson County are experiencing a somewhat similar difficulty, except here many folks who have pets living near woods are having their pets killed by dog packs.

I note in the March issue on page 22 a rabbit snare. Would this snare hold or kill humanely a fair sized dog? We have tried dog traps and although they get in and are held, most always are able to escape.

Do you have any kind of a drawing showing how this snare could be constructed? If you have a drawing, would appreciate one being sent to me.

Any suggestions you might offer in helping to control these roving dogs would be greatly appreciated. SAM BROWN, PRESIDENT, HENDERSON COUNTY HUMANE SOCIETY, HENDERSONVILLE

Snares are illegal, even for catching stray dogs.—Ed.

Teenage Conservationist

DEAR SIRS: I am 15 years old and a lover of wildlife, and try my best to conserve it. I love the outdoors so much that I am planning to enter into the field of forestry when I finish high school. I am a "Royal Ambassador" (an organization for boys) at my church. Since I love the outdoors so much, I suggested that we boys build duck boxes and squirrel boxes for woodwork project. My suggestion was carried out and we built seven duck boxes and two squirrel boxes. We all had fun and would have built more if we had enough wood or boards.

Today I carried a duck box down to a pond nearby to put up. When I got to the pond there was a big flush and a flock of 17 wood ducks got up. I carried a duck call along to find out what effect it would have on the ducks. I blew the call but the ducks kept flying toward Lake Wendell about three-fourths of a mile away. When I got down to the water's edge I had to figure out which logs to walk on to get out to the tree I was going to put the box on. This took about 10 minutes. I took the box and started walking the logs through the shallow water. When I got about half the way out to the tree, I heard a duck screech. I looked up and there were four wood ducks. They sat down on the water about 75 yards away from me and started swimming toward me. I set the box down in the water and took out my call, blew on it twice and the ducks kept coming closer. They got about 20 yards from me and a hen suspected something. She stopped and started looking. I made a slight move and then they flew. TOMMY DAVIS, WENDELL

Paging Mr. Diogenes!

DEAR SIRS: After hunting the last day of deer season and missing two, I returned to the car and unloaded

my rifle. I set it down or laid it on top of the convertible, and opened the trunk to get my case. My buddies and I got to talking about the ones we'd missed and in the turmoil got into the car, forgetting the rifle.

We did not miss it until we got home and unloaded the car. I went back and looked for it, but it was already gone. I have advertised in several newspapers and on the radio stations without any results. I feel that most true hunters are honest, and if I can get word to the one that found it I feel like it will be returned.

Anybody finding a German 8 mm. rifle with a scope on Brown Mountain please call this number in Hickory, 324-6320, collect, and I will give a small reward. WILLIAM C. BRYANT, 321-18th St. Pl. S.W. HICKORY

ROD AMUNDSON

1964 "Wildlife" magazine subscription contest winners: Kenneth Beam, (left) fourth; John Willis, third; A. E. Jones, second; C. A. Manning, Jr., first. Almost 24,000 subscriptions were sold. Commissioner Phil Ellis (right) presented prizes.

Book Review

The *Quiet Crisis* tells a story of such importance that the Secretary of the Interior took the time to write it. It deals with a subject of such vital importance to the people of this nation that the late President John F. Kennedy took the time to introduce it. The *Quiet Crisis* is the story of the conservation movement in America.

The author, Stewart L. Udall, gives the reader a vivid insight into the way in which the natural resources of this great country have been treated. Mr. Udall tells of how the once primitive land, wonderous beyond description, was worshiped by the Indian, feared by the early settler, explored by the mountain man and exploited by those who followed.

Most people felt that the country's vast and abundant natural resources were inexhaustible. The wilderness was a challenge, a thing to conquer. Through ignorance, selfish desires, and necessity the wilderness and the resources which it contained were beaten back and laid waste.

Out of the feverish rush to exploit and long before exploitation reached a peak, came a few men who knew and understood that the abundance could be exhausted and the beautiful made ugly. The struggles of John Muir to save park land, the efforts of Gifford Pinchot to introduce new but wise concepts in forestry and the drastic actions of Theodore Roosevelt that saved much, are just a few of the stories of individualism and greatness that Secretary Udall describes.

In his introduction, President Kennedy said "The crisis may be quiet but it is urgent". The conservation movement came just in time but it is far from being over and may never be truely finished. Because as the late President described it, "Each generation must deal anew with the raiders."

Secretary Udall warns that our beautiful nation can still become an "ugly American". He points out in the chapter, Land Ethics for Tomorrow that "although our economic standard of living has become the envy of the world, our environmental standard has steadily declined". Cities in Trouble is a chapter that many city planners and urban developers should study. The bulldozer too often leaves little choice for the potential resident.

The *Quiet Crisis* is a book that every citizen should read. High school students, especially, should read it. This is the type of material that sets young minds to thinking and makes old ones wish they had acted earlier. The *Quiet Crisis* is the story of America's land and water and every American should be interested enough in it to spend a few hours in learning what has happened, in her relatively short history, to American the beautiful.

John Parker

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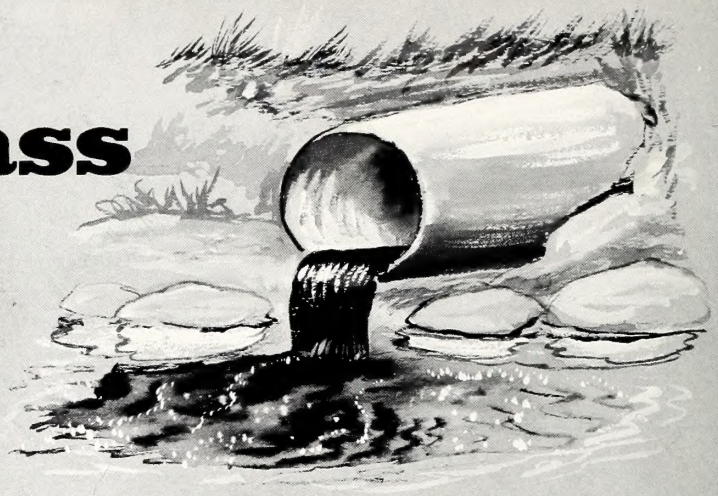
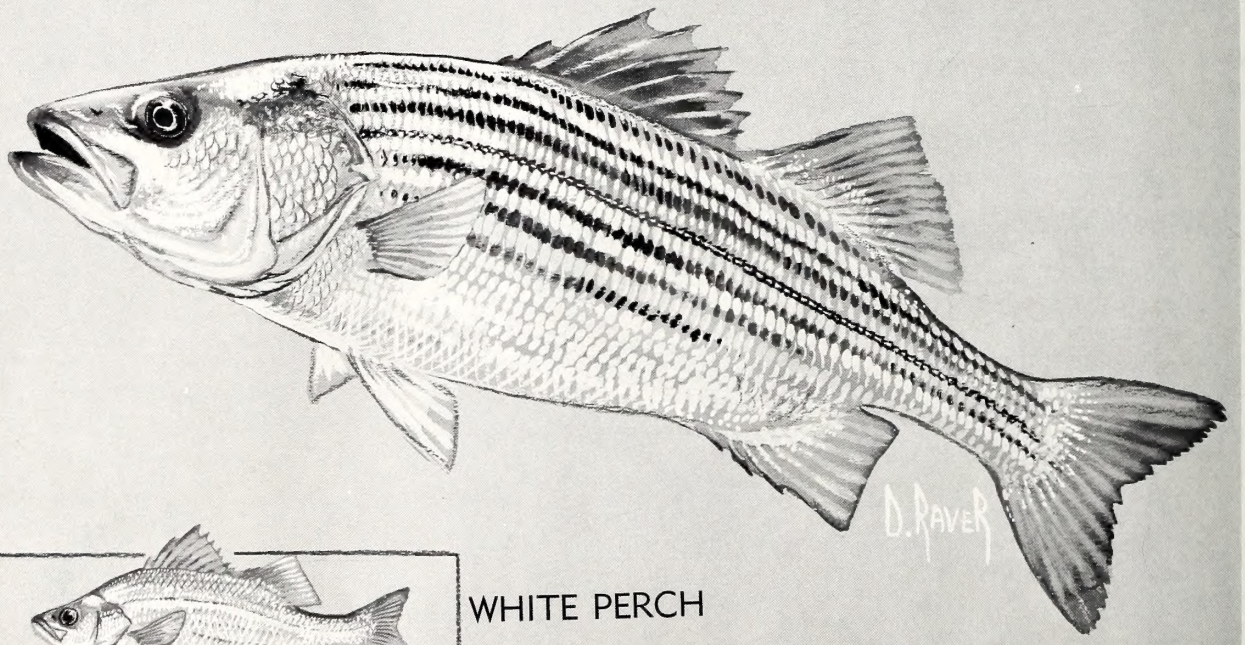
Striped Bass

Striped bass spawning takes place in the spring and the eggs are laid in swiftly moving rivers. At 71° (water temperature) the eggs hatch in about 30 hours; if the water temperature drops suddenly, the eggs may be killed. The egg shown is 29 hours old; the fry, 2½ days old.



Pollution is high on the list of enemies of the striped bass. The spawning period of the striper seems to be one of the most crucial times in the life cycle of this great fish.



WHITE PERCH

WHITE BASS

Two close relatives of the striped bass are found in North Carolina waters. The white perch thrives in brackish waters of the sounds and coastal rivers and is widely scattered over much of the rest of the state. The white bass, introduced into Tarheel water several years ago, prefers large lakes. Maximum size for the white perch is around 4½ pounds although a 2-pounder is a big one. The record for white bass is a bit over 5-pounds.

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Wildlife IN NORTH CAROLINA

JUNE, 1965

KARL MASLOWSKI

Open Wide

A red-eyed vireo is not a white-eyed vireo which has stayed up too late! But this weary parent may become even more red-eyed before the appetites of these eager offspring are satisfied. The nest is typically suspended from a slender fork of a drooping limb, and is made of grass and slivers of bark, lined with finer materials.

STATE OF NORTH CAROLINA

DAN K. MOORE
GOVERNOR

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WILDLIFE IN NORTH CAROLINA recognizes the need for close cooperation between State and Federal conservation agencies and the people who hunt and fish—to bring about a restoration of our renewable resources. The Editor gratefully receives for publication news items, articles, and photographs dealing with the North Carolina out-of-doors, but reserves the right to reject materials submitted. Full credit is given for all materials published.

* * *

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Wildlife IN NORTH CAROLINA

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JUNE, 1965 VOL. XXIX. NO. 6

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LUTHER PARTIN _ _ WRITER-PHOTOGRAPHER
JOHN PARKER _ _ _ _ _ OUTDOOR SAFETY

If you've ever encountered the indigo bunting, the chances are that the intense dark blue of the male (upper) made a lasting impression on you. These colorful but rather inactive birds arrive in North Carolina in early April and stay until the latter part of October. They feed on insects, seeds, berries and fruits. The pair here seems at home in a blackberry patch. Painting by John W. Taylor.

Kerr Reservoir: Nature on Display

by Duane Raver

This message is posted near the entrance of a Kerr Reservoir camp grounds. It should be a guide to our behaviour wherever Nature is to be enjoyed.

WHETHER you want to get away from it all for an hour, or several days and sort of commune with Nature, Kerr Reservoir and its recreational areas may be your answer. This area offers woods, water, and wildlife, plus a measure of solitude. Of course you can expect company since this is an extremely popular spot; but you will find plenty of natural surroundings to take your mind off the people.

Thousands of visitors from as far as upstate New York enjoy the facilities of the Kerr Reservoir area each year. What they come for is camping, hiking, nature study, fishing, swimming, boating, and just plain loafing. What they don't want are organized games, manicured lawns, concrete driveways and air-conditioned cottages. From the mounting numbers visiting the area annually, they must be finding what they want.

Much of the credit for the successful administration and planning of this area must go to the Kerr Reservoir Development Commission members themselves. These men serve without pay and have put in long hours in the public interest. The reward to them for this service is knowing that the job has been well done. The Commission is made up of the following men: J. C. Cooper, Sr., Henderson; N. W. Weldon, Stovall; G. E. Beal, Red Oak (these three have been on the Commission since its formation); C. W. Bradshaw, Raleigh; C. F. Blackburn, Henderson; T. J. Harrington, Henderson; A. L. Hux, Roanoke Rapids; Dr. W. B. Tarry, Oxford; R. C. Mitchell, Manson; John T. Church, Henderson; Dr. Earl Wallace, Chapel Hill.

The Kerr Reservoir Development Commission, established by the North Carolina General Assembly in 1953, has the responsibility of developing, operating and maintaining some 8,000 acres of land adjoining the Nutbush Creek arm of the reservoir. This rolling, wooded area is under license from the Secretary of the Army for public development. The Development Commission's job here is a big one which it has done well and to the satisfaction of thousands of pleased "customers."

"We want to provide areas that entire families can enjoy, yet we try to retain most of the naturalness of the area", says Paul Anderson, Manager for the Development Commission. "We have campsites on the water's edge separated by natural timber; and then there are some tent areas that provide fairly clear sites for those wanting more open areas", Anderson continues. Initial planning helped provide the camp sites with direct access to the Reservoir and a boater can pull his craft up to the shore within a few yards of his tent doorstep.

Specifically what's here? There are year round opportunities for boating, picnicking, hiking and nature study. Some areas (away from camping and general public use) are open to small game hunting during the regular seasons prescribed by law. Camping at developed sites continues from April 1 through November. Designated swimming areas have the services of life guards from about June 1 through Labor Day.

There are five public outdoor recreation areas operated by the Development Commission in the Kerr Reservoir section: Nutbush Bridge Area, Satterwhite Point, Bullocksville Park, County Line Point, and Kimball Point. Additional locations outside the licensed area are Townsville Landing (operated by the Vance County Wildlife Club), and Hibernia and Henderson Point (U. S. Army Corps of Engineers).

Although the reservoir's fishing was its first claim to fame, camping is becoming an increasingly popular family activity. Of course many people make it a combination vacation and enjoy many sports offered by big water. Development Commission camp sites consist of a prepared area for a tent (a ditched rectangle of

compacted gravel), a picnic table, a trash can, and nearby wash house and toilet facilities. Some sites are designed for trailers, but none provides water or electric connections.

The rules for using these sites are simple and are designed to make camping more enjoyable for all: There is a charge of $1.00 per day for their use. Reservations for more than three days are accepted at any time during the year; reservations for three-day weekends are limited to two weeks in advance; for stays of less than three days, the camp sites are on a first come, first served basis. If you take pets, they must be kept on leash at all times. For the protection of your property, camping equipment must not be left unattended for more than 48 hours.

This is one of the tent camp sites on the shores of the Reservoir. The photo was taken during late winter, and by now things have really changed!

Perhaps the best advice concerning behavior while in the camping area is contained in the message on the sign near the entrance of the Satterwhite Point camp grounds, "Take nothing but pictures, leave nothing but footprints." Actually this is nothing less than practicing basic conservation . . . passing on in good condition that which we hold in trust for a short while. Containers are provided for trash; nature is there to enjoy, not destroy.

Although we mentioned that some public hunting is provided on areas away from the camp and recreation grounds, all hunting and trapping is prohibited in the marked camping areas. Public safety is of utmost importance here, and it is up to you to see that you play safe and respect the rights of others. For example, the automobile speed limit is 25 miles per hour, and the tent areas are closed to traffic after 11 p.m.

Much of the development of these recreational areas on Kerr Reservoir follows a pattern established elsewhere. But there are several basic differences that help make them a bit unusual. For example, the genuine desire to retain the naturalness of the woodlands and, when possible, the wildlife. When thousands of visitors pour over the landscape each season, this becomes quite a task. Planning for wildlife and natural areas sets the theme for maintaining Nature on display. The Kerr Reservoir Development Commission has worked closely with the Wildlife Commission in providing plantings for the native wildlife in the area.

Game Biologist Charlie Woodhouse and Development Commission Manager Paul Anderson have surveyed the various sites on the area and have established a long-range plan for enhancing the entire region for wildlife. Some 25, ¼ acre wildlife food plots have been established. Each area was divided in half with perennial food plants, such as shrub lespedeza, placed in one section with standard annual seed mixture sown in the other half. Some of these plots were located near the camp areas simply to attract and hold quail and rabbits, while many of the plantings were established on the public shooting areas.

A few new wildlife food plots are established each year, and annual seed mixtures are sown on many of the old ones each spring. It is felt that cover plants are generally not needed because of the abundance of natural plants.

A glance at any one of the reservoir marinas on a summer Sunday afternoon will erase any doubt about the popularity of boating here. Again, safety is of prime importance, and all the state and federal boating laws should be followed. Since this is a Corps of Army Engineers Reservoir, they maintain certain boating regulations in addition to the statewide rules. It would be well to check with the Reservoir Manager, John H. Kerr, Boydton, Virginia, before your trip.

Several public boat launching ramps are available on the Nutbush Creek arm, including one constructed and maintained by the Wildlife Commission adjacent to the Nutbush Bridge Recreation Area off Secondary Road 1308. Extreme water level fluctuation may make the use of these ramps difficult.

Two fully-equipped marinas are operated under lease from the Kerr Reservoir Development Commission: the Tarheel Marina at Satterwhite's Point, and the Flemingtown Road (Meekin's) Marina just off Secondary Road 1371. Both of these marinas offer most of the services any boater might need.

Conservation, like a lot of other things, starts at home. The Kerr Reservoir area likes people, but it likes people who are considerate of Nature and those who are conservation minded. Make your next camping or boating excursion to Kerr Reservoir. ▲▼

DAVID MURRIAN

FLOAT FISHING— BACKYARD BONANZA

by H. Lea Lawrence

TELL the average angler that he has a fishing bonanza right under his nose and he will likely look at you as though you have lost your senses.

Elaborate further and tell him that some of it is fishing of high quality, seldom touched, and affording plenty of action and solitude and he will head for the telephone to call the boys with the strait jackets.

But if you can contain him long enough to make your point, he'll probably end up feeling as if you have handed him a large and unexpected inheritance.

Sound a little far-fetched? Well, it isn't. You have the same sort of situation I'm talking about available to you. It's just a matter of looking around and discovering it.

It's all wrapped up, in fact, in the often-overlooked area of float trip fishing.

No matter how you look at it —with very few exceptions— float fishing is probably the most neglected and under-rated sport available to anglers across the nation. Few places exist that don't have float trip opportunities, in most cases the fishing offerings are superb. Yet they go unnoticed.

Statewide we have power impoundments, excellent rivers and smaller creeks for floating that offer everything from trout to bass, including, in the process, walleyes, stripers, crappie, pickerel, channel catfish, robin and bluegills. And many of these fine waters are virtually unfished. You may never see another boat while floating on many of them.

You can pick your water, too, for floating. If you're looking for more sport along with your fishing, you can select water that is challenging in a canoe. Or you can pick slow, easy-going water that moves along at a lazy pace. If you want it almost completely to yourself, try a smaller coastal plain creek. Big water or small water, ordinarily there's a wide selection.

One of the most enjoyable forms of float fishing is the overnight, or even the several day trip where a stretch of water is selected for a long run. This type of water often moves through back country, far away from roads. Then you can move along as you wish, fishing where you choose, and put up for the night on some piece of shoreline that looks tempting. With the room available in most boats, you can carry all the gear needed to set up a comfortable camp with no trouble at all.

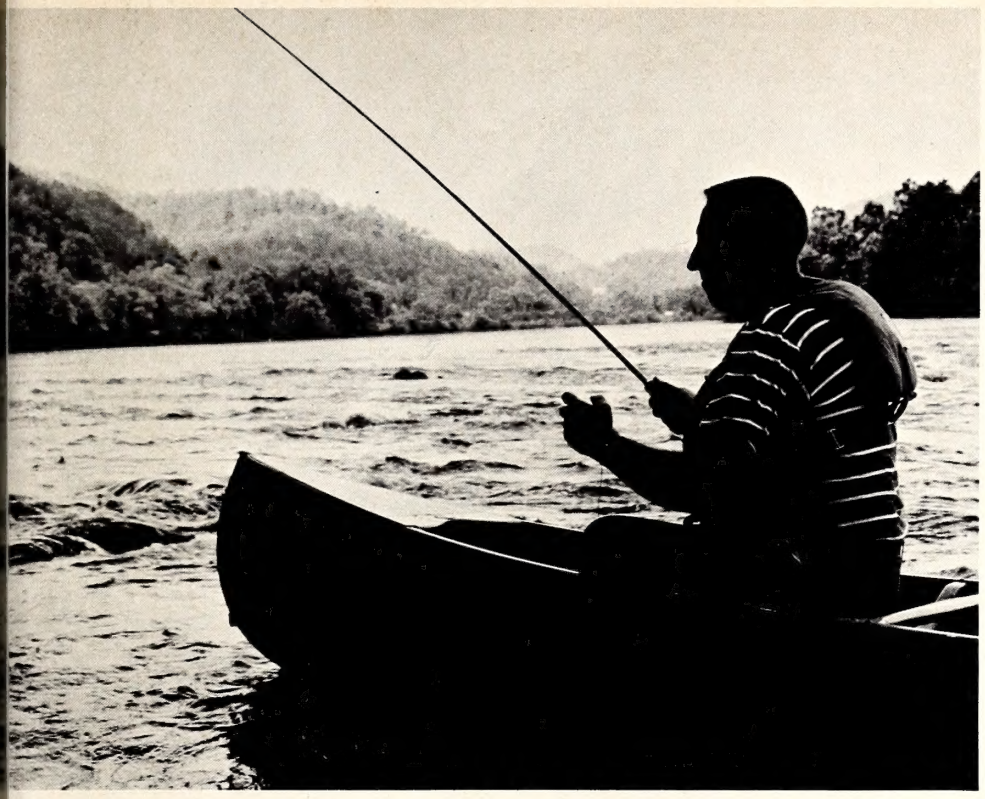
Speaking of the overnight trip, it is also possible to extend a float trip into an ideal vacation. Some waters are of the sort which will handle even houseboats comfortably, and the use of the barge-type craft is also practical. Equipped with a motor, they will move you along at any pace desired, and should you desire to remain longer in one spot, the motor can make up for the lost time in your schedule.

One of my finest memories of the outdoors involves a float trip which two of us took many years ago. We floated leisurely along, fishing where we pleased. The time was early fall, when the color had just begun to creep into the trees, and when the nights were clear and crisp. Sitting before the campfire at such times we enjoyed solitude of the kind most people dream about, and, by the same token, we found fishing of surprising quality. Squirrel season was open, too, and we would glide along noiselessly in late afternoon under the overhanging trees and pick off a couple of bushytails to complement our meal of fried fish, cornbread and baked potatoes.

I was surprised, and pleased, recently when I took the same trip again, on the identical stretch of water, and found that very little had changed. In fact, two of the nights were spent at the same campsites we had used in the past. It seemed like we were stepping back into our memories!

But this is typical, in a sense, of float trip fishing. While pressure on most waters had increased by leaps and bounds, the useage of waters for this purpose has remained at a standstill. It is the only area in which fishing of the quality of "the good old days" can be readily found.

Peculiarly, float fishing isn't an unknown American sport, and most fishermen are familiar with



DAVID MURRIAN

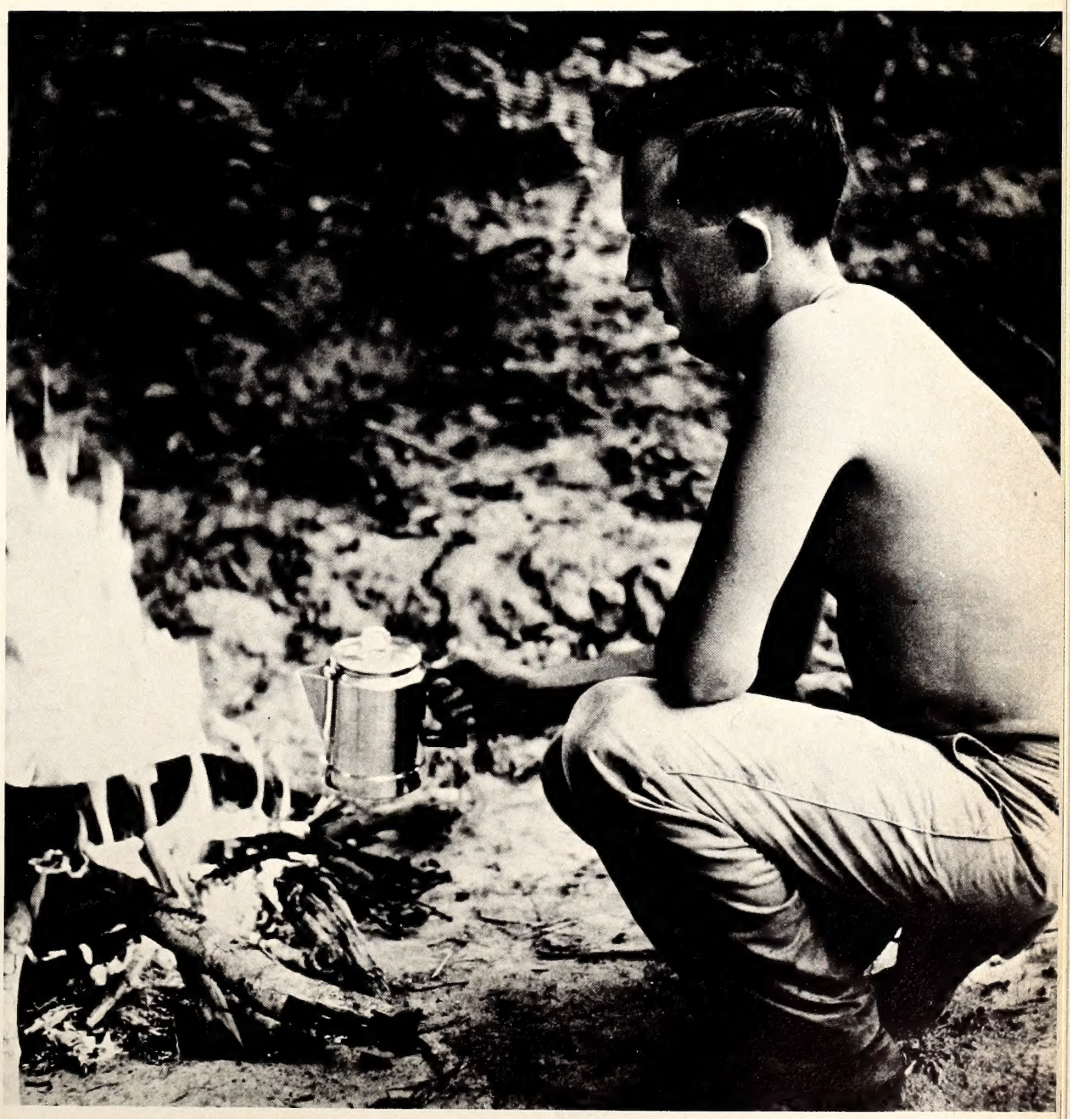
Most rivers lend themselves to canoe travel. Aluminum canoes will take more bumps and scrapes when the going gets a bit rocky. These two bass came from a stretch of stream rarely fished; competition is usually at a minimum. A sand or gravel bar will provide a good base for a cooking fire at day's end.

the famed Arkansas floats, or the wild trips down the Colorado River. But perhaps they simply don't connect the idea with their home areas, feeling that it isn't the same there.

I recall a circumstance that well illustrates my point. Several years ago I lived in Ohio for a while. I was located in a large metropolitan area, and had plenty of opportunity to come in contact with fishermen of the region. These people were as dedicated to the sport of fishing as any I've ever met, and they were constantly looking for some spot they could give a try. They frequented what lakes were available in the region, and even drove hundreds of miles to Lake Erie to fish.

What they didn't seem to realize was that there was plenty of water right in their back yards which afforded fine float fishing. These rivers were full of smallmouth bass, and in some cases, muskies. But I never met even one fisherman who had given float fishing the first thought. It was as if it was something that couldn't be done.

I know the situation there, too, is exactly the same as it was, just as it was the same on the river I revisited not long ago. A wealth



of water lies nearby, and it is untouched except for those fishermen who go out and fish from the banks. And that leaves a lot of water in between!

Going about the business of selecting a float trip water is really quite simple. Topographic maps (available from the U. S. Geological Survey, Washington, D. C.) are a great help, especially in determining mileage, by water, of a prospective trip. In some instances, navigational charts can be obtained from the Coast and Geodetic Survey, Washington, D. C., and these give one an almost complete picture of the water, indicating shoals, small dams, or other obstacles that might not be known about otherwise. Another good idea is to talk to people living along the river who might have some interesting things to point out that even maps might not show.

It is wise to check the mileage by water, rather than by gauging the distance by the number of miles between the place where you intend to put in and where you will come out. There can be a radical difference in these figures sometimes, and it can make a difference, also, in your trip. Four friends of mine found this out the hard way. They were floating a large river with more twists and turns than expected and what they had planned to be an easy three-day float turned out to be much longer, both in miles and in time. They came out O.K., but they were mighty tired and hungry before the ordeal was over.

By checking out water in advance, a fisherman can also find what craft will be best for the float and he can equip himself accordingly. Canoes will take practically any kind of water, *provided the persons handling the canoe know what they are dong.* As in any other phase of boating, safety is of prime importance, and float fishing demands attention to these rules, too.

In any kind of float fishing, save that on the most serene of waters, a life preserver is a vital piece of equipment. In fact, it should be taken along on any trip. The jacket type, can also serve as a cushion in camp or double as a pillow at night.

Equipmentwise, float trips vary according to the length of time on the water and the type of country you'll be in. Some trips will allow you to pass through inhabited areas, where it will be a simple matter to pick up food. Others won't, although for the day-long trip, or even the overnighter, this won't be of particular concern.

I like to take along a small, light tent, cooking equipment, foodstuffs to back me up in case the fishing doesn't provide me with the main menu item, a gasoline lantern, and some extra drinking water. *Tributary rivulets and streams can't be trusted to be pure,* and only by boiling or treatment with water purification tablets can it be made safe for consumption. So, unless you know the area well enough to be certain you have pure water along the way, it's best to take along enough for drinking purposes.

Since I favor a fly rod, this is my principal tackle, although I usually stow away a spinning rod for alternate use. And I always carry a waterproof parka in case of sudden downpours, which are pretty common in late afternoons during the Tarheel summer.

Beyond this, there isn't much needed, except a desire to get into some first-rate fishing water, and an adventuresome spirit.

And most fishermen can provide this without any effort at all!

A Gray Squirrel Nest Box Photo Story

by Dr. F. S. Barkalow, Jr.

THE readiness with which the tree squirrels utilize artificial den boxes has been common knowledge for decades. In city squares around the turn of the century, the combination "bird and squirrel" house was as an essential feature as the central band stand. This knowledge of box utilization by squirrels remained, however, more a matter of aesthetic interest than practical importance until the 1930's when a number of state conservation departments, concerned about the decline in their squirrel populations and the qualitative deterioration of their forests, undertook studies on the life history and management of the gray squirrel (Sciurus carolinensis) and the fox squirrel (Sciurus niger). Artificial den boxes played an important role in many of these investigations, for the comparative ease with which squirrels could be captured in them made the boxes an effective tool for gathering life history data.

During North Carolina's first squirrel investigation (Pittman-Robertson Project 2-R) C. R. Bunn studied the utilization by gray squirrels of 50 boxes erected in a Wake County woodland during 1940 and 1941. In November 1947 Ray Allison, a graduate student at North Carolina State, began a study of the breeding habits of the gray squirrel. In July 1948 Ray received a two-year grant from the North Carolina Wildlife Resources Commission (P. R. Project 26-R) to expand the scope of his original study to provide data on the life history, distribution, and relative abundance of the squirrel bot (Cuterebra) as well as to determine the squirrel breeding peaks, the number and average size of litters, and other vital life history information. Allison used 18 nest boxes of several types to assist him in his study.

What effect the erection of artificial nest boxes have on the carrying capacity of an area has been largely a matter of speculation over the years. To find the answer to this question we began, in March 1956, an investigation entitled "An evaluation of squirrel nest boxes on selected experimental areas" (PR Project W-44-R) under the sponsorship of the North Carolina Wildlife Resources Commission. In January 1962 the scope of the nest box study was enlarged by the receipt of a grant from the National Science Foundation (G-20739) to investigate the "Population phenomena of Sciurus c. carolinensis."

An extensive tract of mature, unbroken woodland closed to hunting was essential to our needs, and through the cooperation of the Department of Conservation and Development's Division of State Parks, two research plots were establshed in the Natural Areas of Reedy Creek and the William B. Umstead State Parks.

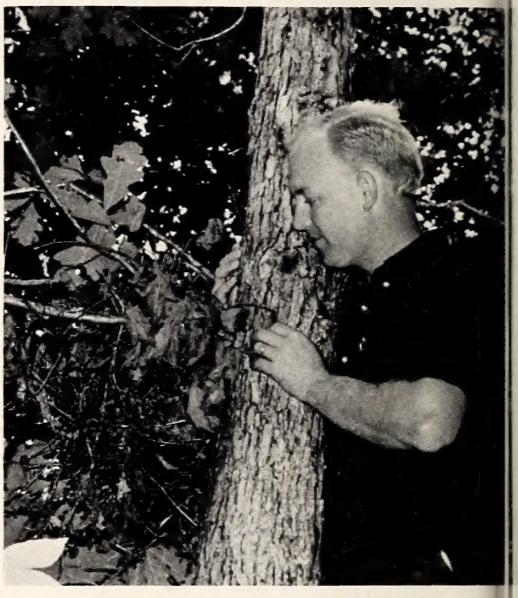
A great deal of assistance is needed to conduct a field investigation of this kind and during our 8½ year study six graduate and 120 undergraduate students in wildlife, forestry, and zoology were employed. One of the most valuable by-products of the project was the research experience gained by the student participants.

In a paper entitled "An analysis of the effect of artificial nest boxes on a gray squirrel population" which was given on March 10, 1965 at the 30th North American Wildlife and Natural Resources Conference in Washington, D. C., Mr. Robert F. Soots, Jr. and I were able to report that under the conditions of our experiment the artificial nest boxes did increase the gray squirrel carrying capacity of the areas on which two boxes per acre had been placed. A few photographic highlights of our project field activities are shown in the accompanying photo story.

Now where did mother go? This eight weeks old youngster will not be completely weaned until it is ten to twelve weeks of age.

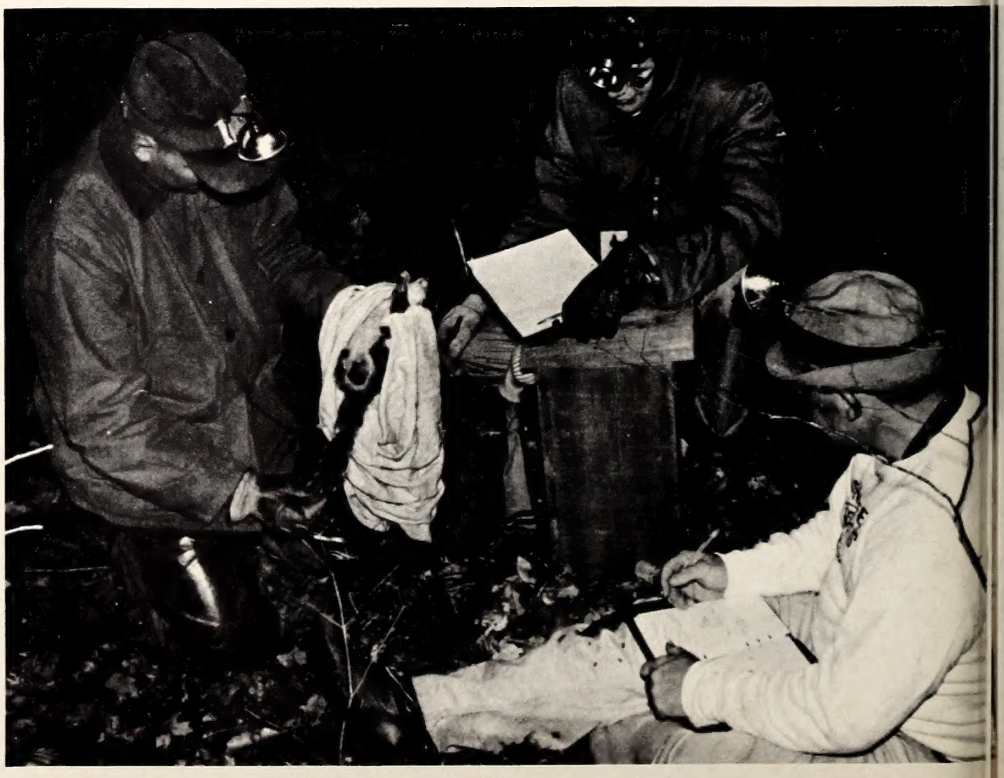
Squirrel Nest Box Story

A beech ravine bordering a small brook is a favorite site for the location of litter nests.



Honey bees (left) sometimes appropriate a box. Note wire bottom for drainage. This summer leaf nest (right) appeared flimsy, but was actually solidly anchored and lined with fresh white oak leaves.

The box entrance is closed with a leaf-filled sock prior to box examination (lower left). Below, a night box check ascertains the number of individual squirrels occupying each box.



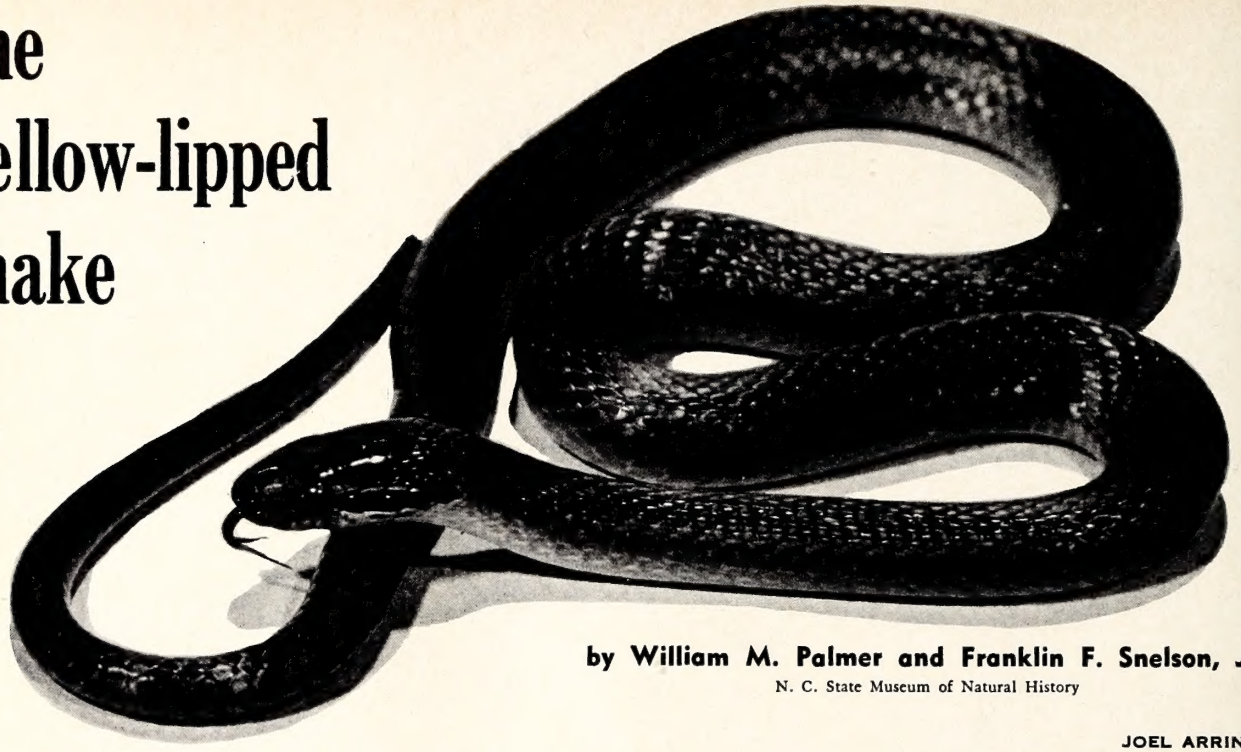
F. L. JOHNS

A box was developed which could be detached and brought to the ground for examination. This facilitated the box checks and reduced the number of squirrels escaping. At one day of age (below) the baby squirrel is completely helpless. Its ears will open at 3½ weeks and its eyes about one week later. The 18-day old squirrel (lower) is covered with grayish fuzz over the dorsal surfaces, white fur on the underparts.

F. L. JOHNS

The smaller the box's entrance, the greater protection the occupants receive. Most predators are excluded by the 2½" round hole. Finely shredded grape, cedar, hornbeam, or poplar bark is used by the female to line the cavity of her litter nest (left). The black rat snake is but one of the squirrel's natural enemies (lower left). Numbered metal ear tags made it possible to study the movements and other biological aspects of each individual squirrel.

The Yellow-lipped Snake



by William M. Palmer and Franklin F. Snelson, Jr.
N. C. State Museum of Natural History

JOEL ARRINGTON

ALTHOUGH the first specimen of the yellow-lipped snake, *Rhadinaea flavilata,* known to science was discovered in Carteret County, near Fort Macon, during the late 1800's, it is only in relatively recent years that sufficient numbers have been collected to provide some information concerning the biology of the species in North Carolina.

It is doubtful if the average person is aware of the existence of this secretive species which superficially resembles several other small forms known locally as "ground snakes." The yellow-lipped snake is characterized by a rather uniform golden brown color above and yellowish beneath. A prominent dark brown stripe is present from the vicinity of the nostril to the rear margin of the head. The stripe is narrower in front of the eye and wider behind. The top of the head is generally much darker than the back, and small dark spots are evident on the upper lip. This small species rarely exceeds fifteen inches in total length.

The yellow-lipped snake is restricted to the coastal plain and ranges along the coastline from North Carolina (where it has been recorded as far north as Dare County) south throughout much of peninsula Florida and westward along the Gulf Coast into extreme eastern Louisiana. The species has been recorded in North Carolina only as far inland as Bladen County.

Seldom seen crawling about except occasionally after dark on paved roads, this evasive species usually is found beneath cover in sandy pine flatwoods. From such areas specimens have been collected inside rotting pine logs and stumps, beneath boards and scrap paper, and under debris in trash-littered clearings.

There is evidence that the yellow-lipped snake possesses a mild toxic venom that is secreted through several large teeth in the rear of the upper jaw. Although apparently of sufficient toxicity to immobilize small prey, this venom certainly is in no way harmful to man. In fact, we have never observed a specimen try to bite even when first collected, and it is doubtful if the small teeth could penetrate human skin. Like most species, however, the yellow-lipped snake when first captured voids a rather pungent but harmless musk that is offensive to most civilized noses.

The food consists primarily of small frogs and lizards which are either swallowed alive or shortly following immobilization from venom action.

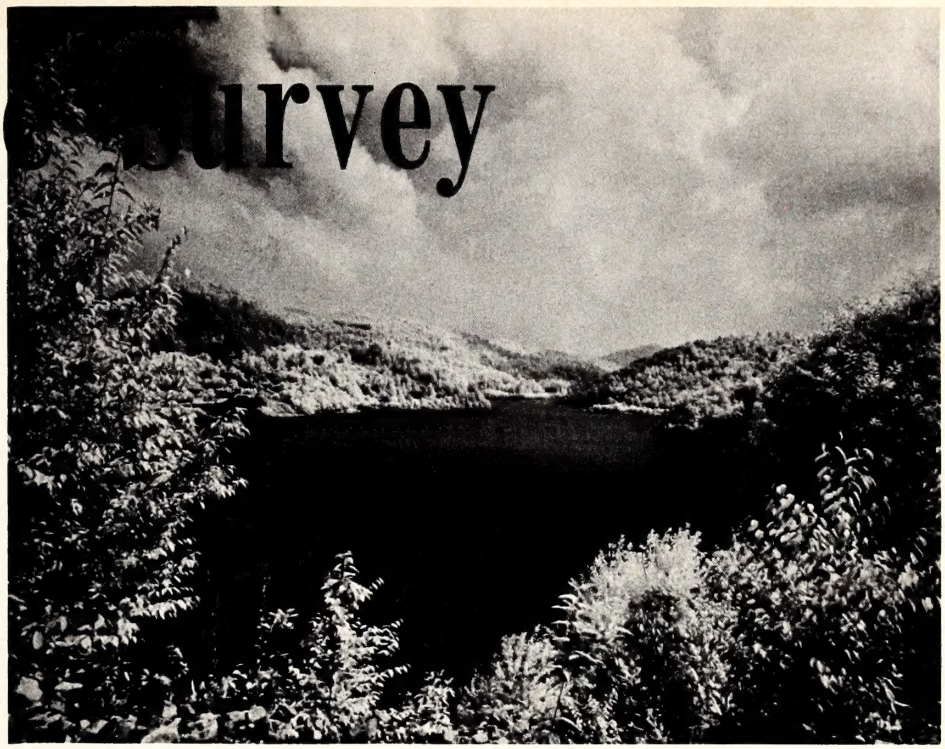
Mating presumably takes place in the spring and three to six eggs, considerably longer than wide, are laid in the early summer. These eggs are deposited in rotting logs or similar places and hatch in August and September. Although there is no available information concerning hatchlings in North Carolina, juvenile yellow-lipped snakes probably are about five inches long at hatching.

Most yellow-lipped snakes prove nervous and restless captives, but as a general rule feed fairly well upon small frogs and lizards. Several specimens kept in captivity at the State Muesum of Natural History remained hidden during the day beneath a small piece of cork bark, but could be observed prowling about the cage after dark. This species is definitely among our most secretive snakes and captive examples should at all times be provided with suitable shelter under which to hide.

• **Next Month: The Rat Snake**

Lake Survey

Fishery biologists converge on a beautiful mountain lake to apply scientific investigative techniques. An unusual "staircase" fishery may be the result.



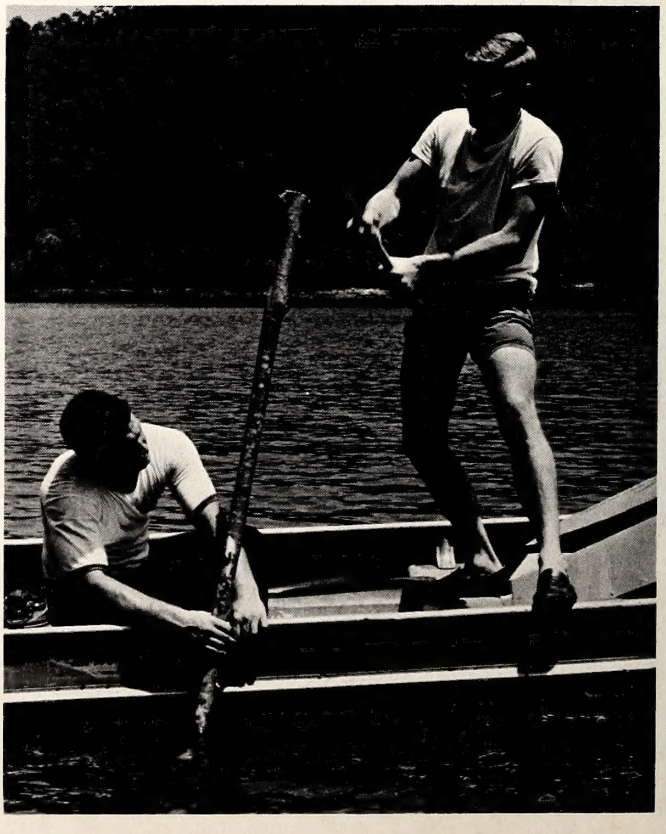
Before an answer to good fishing can be found, the exact nature of the limiting problems must be known. As an example of problem solving, here is 176-acre Wolf Creek Reservoir, the beautiful topmost link in the chain of four impoundments of the Tuckaseigee River in Jackson County. This reservoir might support a unique "staircase" sport fishery where, by careful and continuous management, excellent warm-water fishing would be found in the upper stratum, a cool-water fishery for smallmouth bass in the middle layers, and a trout fishery in the cold-water depths. On the other hand, it might be one of those hodge-podge situations too warm for trout and too cold for warm-water fishes. Obviously, management of the lake—to realize its maximum game-fish potential—demands exact knowledge of this water and all it contains.

Photo Feature by
Joel Arrington

This is one of the many jobs a fishery biologist may be called upon to perform that wasn't described in the text book on fishes he studied in college. Use of a toxicant demands knowledge of the quantity of water to be treated—otherwise a drastic, uncontrolled fish kill may result. Here the area of the cove to be sampled is being measured with a transit and stadia rod.

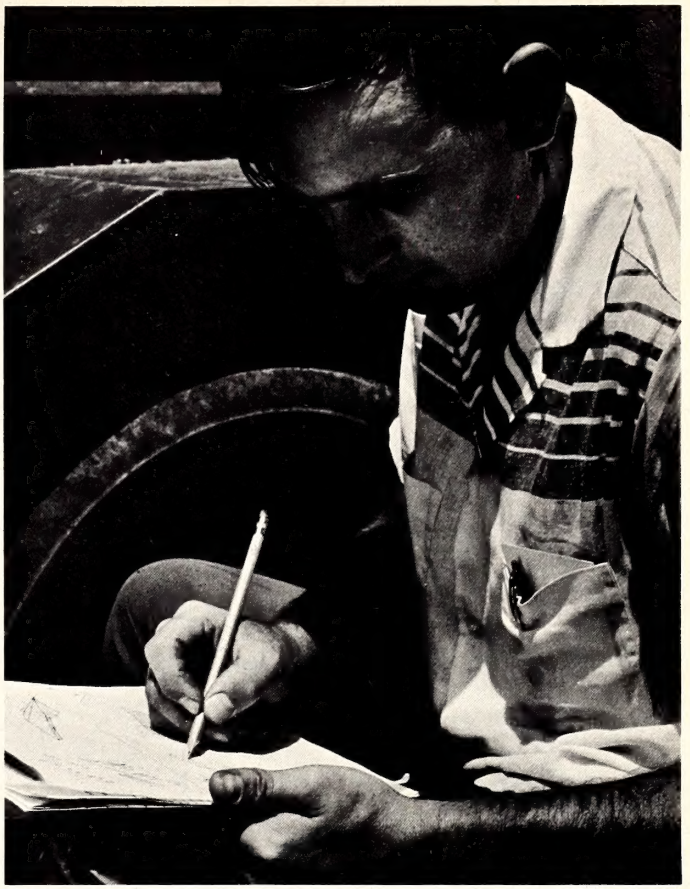
The foremost question is "What kinds of fish are now in the lake?" It is much easier to ask this question than to answer it. One way is to block off a small cove of the lake with a long, deep "curtain" net—then apply a carefully determined quantity of a toxicant, as is being done from the boat in the foreground. The toxicant used forces most fish to the surface where they can be recovered with a dip net.

The toxicant method is effective for collecting fish in shallow waters. For those which are found in deep water, some form of netting ordinarily is used. Here, the fishery biologists are lifting a trammel net at dawn. Why the inconvenient hour of dawn? So the desirable fishes (which are caught principally at night when the net twine is not so readily seen) may be released as soon as possible. The trammel net works something like a trap. The fish usually hit the fine mesh, thereby forming a pocket which the fish cannot escape. The trammel net not only catches fish, but, depending upon which way the fine mesh was driven, it also tells which way the fish was going when it encountered the net.



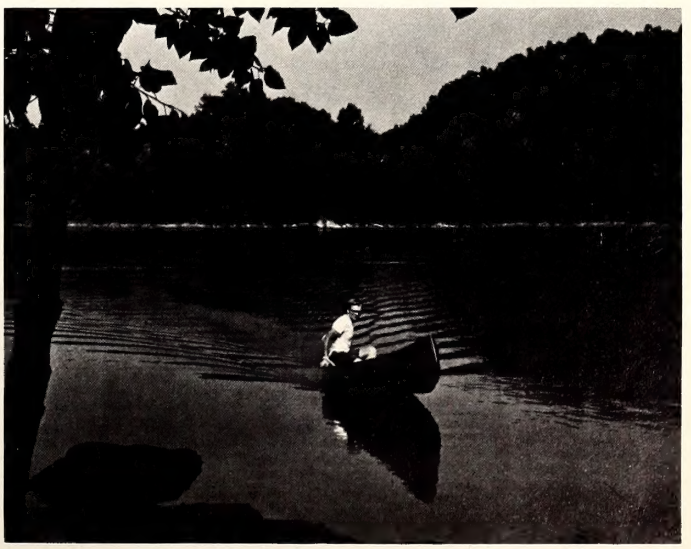
Lake Survey

It is just as important to know the physical and chemical properties of the water at various depths (which can be quite different) as it is to know the fish that are there. To obtain a sample of water from any desired depth was quite a trick until Mr. Kemmerer designed the sampler shown above. Essentially a brass tube that can be stoppered at each end by remote control, it is lowered to the desired depth in an "open" position—that is, the large rubber stopper at each end is held about an inch away from the tube. When the desired depth is reached, a brass messenger (which the operator is holding) is slid down the line. The messenger triggers a release mechanism upon contacting the submerged sampler whereupon the rubber stoppers pop into each end of the tube trapping a column of water. The water may be withdrawn with a minimum of exposure to the air via the small plastic tube at the bottom.



Above, a fishery biologist makes one of the many mathematical calculations necessary in a lake survey. Precise quantitative and qualitative measurements are necessary for accurate results.

Left, college students studying a fisheries curriculum are hired by the Wildlife Commission during the summer months. This works to mutual advantage—the Commission gets high-quality temporary help and the students get invaluable field experience. But all is not back-breaking work. A leisurely canoe ride on the still lake at dusk is adequate preparation for a camp meal.



The Skipper

Conducted by John Parker

THERE is nothing new about fishing in salt water from a small boat. Long before the outboard motor took on its smooth appearance of today, coastal fishermen were loading small open skiffs with those large croakers of yesteryear, king-sized blues, etc.

The open skiff is still around and it is still a mighty fine fishing platform. Such rigs can still be rented on the coast for about $2.00 per day. The price normally includes a wooden bailer, a pair of oars and in recent years a life preserver cushion for each occupant.

There is a special type of fun in fishing from one of these boats that look about the same today as they did when folks did their trolling from a sailboat. Perhaps this is because we spend more time fishing than admiring our boat. Still it's mighty difficult *not* to admire a new twin-mounted, deep-v runabout that still has the factory smell.

No, there is nothing new about fishing from a small boat in coastal waters. Relatively new, however, is the great amount of fishing that is being done from the modern runabout, the day cruiser, etc. These craft are being found in ever-growing numbers along the coast and inland as well. There are literally hundreds of makes and types—yet most of these boats are much safer and more durable than the romantic old skiff that still serves.

Scientifically designed though they may be, most of the modern runabouts still need a few additions in equipment, as you would expect, and a little of the personal touch if very much serious coastal fishing is to be done.

In order to turn the average pleasure craft of today into a well-equipped boat for trolling or bottom fishing, we could spend over a $100—not including fishing tackle. This will depend, of course, on how far we wish to go and just what was included as standard equipment at the time of purchase.

There are probably a dozen or so items over and above the standard required and optional safety devices which could be added. These items may range in price from nothing for a homemade gadget, to a $25.00 ice chest or $40.00 folding top.

Let's look first at one homemade gadget which consists simply of one board. I call it a bait board. It is used as a surface on which to cut bait or to clean your catch. The size of the board depends on the size of your expected catch. (On some days you could carry such a board in your shirt pocket!) Regardless of what you decide on, you will save the boat seats and flooring from a lot of cuts and scrapes.

If you do a lot of trolling and have more than a few leaders and trolling lures, you may wish to rig some type of storage device for them. A dozen or so wire leaders with lures attached, (spoons and jigs), can mean trouble in your tackle box. A board with the desired number of cup hangers attached makes for good storage. The board can be mounted in the boat making it accessible for trolling but still out of the way.

Speaking of storage, it is a real help to have rods stored in an out-of-the-way place when they're not in use. On small boats this can be a problem. As you may have noticed, the charter boat skipper often stores rods in overhead racks in the cabin. If your boat is large enough, you might follow this example. Or you might try rod holders similar to those sold by Pflueger. These sell for about $4.00 per set (set holds four rods) and can be mounted on the side of smaller boats. Also, I have often thought

Outboard fishing craft use this docking area on Hatteras Island along with the big charter boats. Both make good catches.

JOEL ARRINGTON

that the ski pockets on the newer runabouts would be ideal for tackle storage.

Rod holders are probably the most useful items that can be installed, especially if you are a member of the trolling club. Not to be confused with the storage racks mentioned, rod holders serve to hold your trolling tackle during these long spells between strikes. A set cost from a few dollars to over $10.00 depending on if they are chrome or of some other material. Mounting will vary from one boat to the next, but many operators like the rod holder within reach of each seated fisherman.

A small percentage of those who go in for trolling are going one step further with the trolling equipment and installing small boat outriggers. These, it seems, would be rather unwieldy unless your boat is in the 18- to 20-foot class or over. Fiberglass is the usual material for the outrigger pole, and the price is considerably more than most of the items we will discuss here. But outriggers often help trolling and you may wish to check further into this item.

The ice chest or fish box, is a must item for any enjoyable trip. Very few boat manufacturers are including the fish box as standard equipment. One popular North Carolina boat builder will install a full-sized box for about $30.00. If you plan any offshore trolling for king mackerel, you will no doubt want the largest ice chest available. The larger portable ice chests (about two feet long) cost $20.00 and up. I am thinking of the aluminum models; the plastic types are cheaper. It goes without saying that the ice chest certainly is a must if you want cold drinks.

Many of the newer boats, usually the custom models, have back-to-back seating arrangements. Although this was probably intended for the ski observer, it certainly makes for trolling comfort. If your boat is not quite so fancy, then the clamp-on trolling or boat seat or lightweight aluminum-framed boat chairs may be of your choosing. There are also models available that will clamp on the tank type or flotation type seat.

Many boaters would consider the compass as standard equipment, and I believe most will agree that if you intend to fish in any open water and especially offshore, a compass is needed. Also, at least basic knowledge of how to use it will make you feel more confident while on open water. The price range is wide, but for the outboarder or for small inboards a compass of about $20.00 from a reputable manufacturer should be fully reliable enough.

Another piece of equipment considered standard by many boaters is the fender. Some form of fenders, preferably large ones, come in handy when fishing around piling for sheephead. If you intend to do much of this type of fishing with your high-priced runabout, you will want to rig some type of efficient fender system even if it is just a couple of old tires.

Speaking of sheepheading, don't forget to carry along an old shovel or hoe to scrape off barnacles and mussels from the piling. As you know, sheephead go for these salty morsels and as well fiddler crab. And since we have mentioned bait, you may wish to study up on the art of chumming and carry along a wire basket, union sack or the like to hang over the side as a chum pot.

Long days in the hot July sun can be made just a bit more comfortable with a convertible top fitted to your open rig. There are many things to be said in favor of the top. Price—about $40.00 depending on the size.

With the prize fish along side, the first thing to reach for is the gaff. A four foot, $2.00 gaff, may mean to the success of your trip what a life preserver means to the man overboard; it may save the day.

Inexpensive work gloves are good for handling leader when landing fish, for cleaning fish, collecting sheephead bait, etc. And since we have worked down to the cleaning of fish, let's not forget at least one good knife. A sharp fillet knife and a shorter utility knife for scaling, bait cutting, etc., is a good combination.

If you favor the wire type leader, then a pair of wire cutters is necessary for rigging. However, after the original cut is put in the leader, bend it back and forth breaking it; this eliminates the sharp edge left from cutting clear through.

After a day's fishing, if the boater is lucky, he will have at least some clean up. Sponges, mops and a bucket are good items to have on any boat and can be especially helpful in cleaning up the fishing boat.

We may not have touched on all the pieces of equipment that are needed to turn the family runabout into an all purpose sport fisherman, but those mentioned, if used, will put you in better shape to handle schools of salt water scrappers once you have located them.

***National* SAFE BOATING WEEK**
July 4–10

Study of Wildlife Diseases — conclusion

This is the conclusion of a two-part discussion of the activities of the Southeastern Cooperative Wildlife Disease Study. Dr. Hayes is the unit's Director. Specific studies are examined in this article; Part I appeared in the May issue.

by Frank A. Hayes, D.V.M.

THE 1963-64 grant is being used to sponsor three major research undertakings, which were given top priority in relative significance for the future well-being of game animals in the southeastern United States. The programs inaugurated were:

CATTLE FEVER TICK STUDY—Budgeted at $74,000 for a two and one-half year period. This project is being conducted in collaboration with the USDA Agricultural Program of the U. S. Virgin Islands. Dr. Robert L. Park is Project Leader.

The major objective of this investigation is to determine the status of white-tailed deer as reservoir hosts of tropical cattle fever ticks (*Boophilus microplus*). A second objective is to disclose whether fever ticks can be eradicated by dipping cattle only, when these animals share a common range with wild deer. In other words, in the event that these disease-carrying ticks should be reintroduced onto the continental United States, will a deer slaughter program be essential for tick eradication?

If it is found that fever ticks can be eradicated without the necessity of exterminating deer, information thus gained can be of great value to the livestock industry and deer management. On the other hand, if deer are found to be capable hosts for *B. microplus,* and it is shown that these parasites can successfully negotiate repeated life cycles under field conditions, this information also will be of paramount significance for future Cattle Fever Tick control programs. Data acquired from a study of this type will be a tremendous asset to future cattlemen/sportsmen relationships. If this opportunity had been wasted, modern rapid transportation would inevitably precipitate a situation to be regretted by many livestock producers, sportsmen, and millions of other taxpaying Americans.

DEER ANAPLASMOSIS STUDY—Budgeted at $44,000 for a one year period. The project is being conducted in collaboration with the Georgia Coastal Plain Experiment Station of the University of Georgia College of Agriculture at Tifton. Dr. David M. Bedell is Project Leader.

The major objective of this investigation is to determine if wild deer of the southeastern United States are harboring *Anaplasma marginale* and subsequently serving as latent carriers of a highly fatal cattle disease. In the event that deer are found to be reservoirs of anaplasmosis, a second objective will be to establish the distribution of the disease among wild deer throughout the Southeast.

Although anaplasmosis is primarily a disease of cattle, recent studies indicate that deer may constitute a potential wild animal reservoir for the disease. The possible role of these animals as latent carriers of an infection that can be transmitted to cattle therefore becomes a matter of grave concern. This is particularly true for purebred cattle where wild deer coexist.

In order to protect the interests of livestock producers and sportsmen throughout a major portion of the southeastern United States, a research program of this type is imperative. Regardless of the outcome of this study, information thereby obtained will be of immeasurable value to all game agencies and cattlemen of this region.

GAME BIRD PARASITE RESEARCH—Budgeted at $67,000 for a two and one-half year period. The project is being conducted in collaboration with the Poultry Department of the University of Georgia at Athens, Dr. W. Malcolm Reid, Project Leader.

A major objective of this investigation is to determine the significance of parasitism among wild game bird (turkeys, quail, ruffed grouse, doves, etc.) populations throughout the southeastern United States.

A second objective is to identify and describe all new species of parasites that are found during these studies. In an effort to lend more knowledge to the biology of game bird parasites, life history and pathologic capability studies will be conducted according to indications which might be disclosed. Where suggested, interrelationships between game bird parasites and domestic poultry also will be investigated.

Data obtained from this program should be of paramount interest to parasitologists, poultrymen, game biologists and all other individuals concerned with game bird conservation. This information should prove to be a great asset for future game bird management and relocation programs.

The second $200,000 appropriation became available in July of 1964, and research projects subsequently were established October 1, 1964. It is encouraging to note that the second series of programs was initiated three months earlier than last year's schedule.

The 1964-65 grant is being used to sponsor three major research undertakings, which have been given priority in accordance with their relative significance for the future well-being of game animals in the southeastern United States. The programs thereby inaugurated were:

WILDLIFE TULAREMIA STUDY—Budgeted at $33,000 for a one year period. This project is being conducted in collaboration with the Department of Microbiology and Preventive Medicine of the University of Georgia School of Veterinary Medicine at Athens, and the Georgia Department of Public Health at Atlanta. Drs. Harold B. Hubbard and John H. Richardson are Chief and Co-investigators respectively.

The major objective of this investigation is to obtain measurement techniques for determining apparent and inapparent infections which may be used in formulating hypotheses regarding the ecology of Tularemia (Rabbit Fever). A second objective is to develop a methodology that can be applied specifically to an experimental epidemiological study of this disease in the southeastern United States. Considerations also will be given to developing wildlife sampling procedures for detecting *Pasteurella tularensis* and for refining fluorescent-antibody techniques so that this procedure can be used as a rapid screening system for detecting the specific infectious entity.

Human cases of tularemia and sporadic outbreaks of rabbit tularemia in the southeastern United States continue to be reported. The inadequate evidence available concerning concomitant factors contributing to this occurrence becomes increasingly evident. The mechanisms responsible for perpetuating this disease have been the subject of much conjecture.

It is the general consensus that cottontail rabbits constitute a paramount source of tularemia for man. Considering the wild rabbit in this role, however, it would be expected that these mammals should manifest a more insidious form of the disease instead of the usual acute, rapid, population-destroying die-off. In keeping with this line of thought, it appears more likely that tularemia exists in a chronic form within smaller rodent populations (rats, mice, etc.), and that wild rabbits may be victims of a variety of circumstances which promote an increased incidence of the disease in other animals. These possibilities are being investigated.

Information gained from this study may provide many revisions in recommendations for the propagation and management of wild rabbit populations. The public health implications of the findings also should materially contribute to prevention of the disease in mankind.

DEER PARASITE STUDY—Budgeted at $79,000 for a two year period. This project is being conducted by the Southeastern Cooperative Wildlife Disease Study.

In actuality there are six primary objectives involved within the scope of this investigation. The first is to evaluate the extent that white-tailed deer may or may not benefit from supplementary food-plot planting programs. A second is to disclose whether or not wild deer actually may be harmed by this aspect of management. A third is to determine what effect deer population density may or may not have on parasite burdens. A fourth is to identify presently unknown larvae found in great numbers within lungs of deer. A fifth is to ascertain if lung worms which infect both deer and cattle are the same species. A sixth is to explore the possibilities of examining deer pellets for parasite eggs, in an effort to mathematically predict the level of parasitism within a given deer herd.

Data obtained from this study should be of real value in determining the advantages or dangers inherent in food-plot planting concepts over wide areas of forest land, particularly in the humid, mild climate of much of the southeastern United States. It then should be possible to state whether an increase in carrying capacity gained from food-plot plantings might be offset by increased parasite burdens. On the other hand, it is conceivable that data collected may fully justify the use of food-plots as an adjunct to white-tailed deer management.

Data from this investigation will be of great practical value to sportsmen, game conservation agencies, and the U. S. Forest Service (USDA). The monies spent for research will be nominal in comparison to those annually expended for currently unproved practices. In addition to establishing the value of food-plots for deer, a tremendous amount of basic information will be compiled relative to the parasites of white-tailed deer in the Southeast.

RACCOON RABIES STUDY—Budgeted at $71,000 for a two year period. This project is being conducted in collaboration with

• **continued on page 26**

Lost Fawn

JACK DERMID

How long will this fawn last on this sort of diet? Even under the best of "artificial" conditions, its chances are not good. Leave fawns in the woods.

A SEEMINGLY lost woods baby has an almost universal effect on the human animal. Even the most grouchy type of individual is apt to cuddle a baby rabbit they think is motherless, and with radiant features, hurry home to care for the "helpless little thing." This trait is certainly commendable, and may often furnish one of the few glimpses into the interior of the human machine that reveals the true nature of a person.

Creatures of the wild are seldom "lost." One of the parents is usually in the vicinity. Fawns are sometimes found in the woods and carried home by well-meaning people. But chances are the mother was somewhere nearby, counting on the fawn's camouflage and lack of odor to protect it from harm while she fed or went for water. In times of danger she may signal the fawn to stand or lie motionless, or to run for cover. She will often expose herself to an enemy and lead the source of danger away from the fawn. It may be several hours before she feels it is safe to return to the fawn. It is usually this type of situation that accounts for people finding "motherless fawns."

Some people who take fawns home do so with the knowledge that the mother is in the area—they simply want a pet deer. This is an unwise thing to do; first of all it is illegal. It is difficult to provide a proper diet for an animal in captivity that would normally be eating twigs, leaves, grass, wild fruits and acorns. Trace mineral deficiencies and diarrhea are commonly associated with feeding captive animals, and often result in death.

Deer raised in captivity have little natural instinct for survival. In the wild they have a hard time finding food and shelter. They are also more susceptible to disease and parasites, as they have not had the proper conditions to develop resistance. Natural enemies have little trouble preying upon them, since they have no reason to fear dogs and people, the major predators. They show up in gardens and around the feed lot, making the out-of-season hunter's job a simple one.

There is an element of danger involved with pet deer. The buck in rut can be completely unpredictable. He may injure or kill people. Even after being released from captivity, bucks have been known to visit houses and attack the residents. The antlers and sharp hooves are formidable weapons against an unarmed person with no shelter immediately at hand.

Nature has equipped the fawn for survival in the wild. It's color and spots help it to blend into a background of vegetation. It has very little odor, making it difficult for dogs to detect it. A fawn will stand or lie perfectly still for long periods of time if danger lurks nearby. This affords good protection against a predator that depends on sight and sound to locate its prey.

The doe can effectively fight off an enemy if forced into a personal combat situation. On one occasion I observed a doe defending her fawn from a bobcat. She diverted the cat's attention away from the fawn by acting as a live decoy. When the cat attacked her, she charged straight at him, standing on her hind feet and slashing with her front hooves. The cat leaped back at the pounding from the doe's feet, circled warily, then plunged at the doe again, only to be met with the same trip hammer attack. This was too much for him to take. The last I saw of him was his tail stub bobbing up and down as he dashed into the woods.

This, and similar observations of wildlife undisturbed in their natural surroundings, has caused me to more fully appreciate Mother Nature's methods of caring for her babies in the wild. Man, at his best, presents a threat to the welfare of wildlife when he tries to play "mother". Human hands can never furnish the education for survival with which Mother Nature nurtures her own. *Luther Partin*

NORTH CAROLINA WILDLIFE

RESOURCE-O-GRAM

A ROUNDUP OF THE LATEST WILDLIFE NEWS

June 16 Set to Establish 1965-1966 Hunting Seasons

June 16 is the date set by the Wildlife Resources Commission to establish dates, bag limits and other regulations for the 1965-1966 hunting and trapping seasons. All furbearing and game species except migratory game birds will be established at the time. Migratory game bird regulations are established by the Bureau of Sport Fisheries and Wildlife, U. S. Fish and Wildlife Service.

The Raleigh meeting follows a series of nine public hearings held in late May to give Tarheel hunters and trappers a chance to express their opinions on how the regulations should be set. Few changes over last year's rules are expected.

Boating is Fun — When Safe

Something like 40,000 registered boats, plus an equal number of power boats not requiring registration, will be on the waters of the state during the rest of the summer. Although most of these boats will be operated for pleasure, it can be expected that there will be a heavy toll of life and property unless boaters follow the simple rules of safety and common sense. The U. S. Power Squadron and the U. S. Coast Guard Auxiliary will join forces with Governor Dan Moore and the Wildlife Resources Commission to observe the week of July 4 as National Safe Boating Week.

It should be pointed out, however, that boating safety, like highway safety, is a year-around concern of all people who operate boats.

Salt Water Fishing Should Peak in June

June, in Tarheelia, is usually the month when salt water fishing reaches a peak that will remain until cold weather in the fall. At least two blue marlin tournaments are set up for early June, and big game anglers will be going out for sailfish, plus dolphin, amberjack, king mackerel and other blue water species.

Places to Stay at Mattamuskeet

Considerable interest was generated by the May "Wildlife" article, "Bass Fishing At Lake Mattamuskeet." Inadvertently, many places accommodating sportsmen in this area were omitted. As a public service we are listing the motels and hotels in the Mattamuskeet area: in Fairfield, Simmon's Lodge, Gene Tunney's Motel, Wild Goose 'N, Sadler's Motel; at Mattamuskeet, Oneal's Motel, Mattamuskeet Lodge; in Englehard, Englehard Hotel, Midgett's Motel; and in Leechville, Worthmore Motel.

Bream at Bedtime

by Frank Mooney

JIM LEE

The term "bream" usually means the bluegill; but it may include the warmouth (as does this catch of farm pond fish) and several other sunfishes.

WHEN most panfish slow their activity with the coming of warm weather, the bream start getting ready for "bedtime." During this period the bluegill is sought after more than all the rest of the panfish combined. Young and old, male and female, try their luck at catching them. In most of North Carolina, bream at bedtime means open season, no limit on number or size and a good time to be had by all. Everyone in the United States has a chance to catch him. Every state has a bluegill population, proving that this versatile panfish will live and reproduce in most any climate. Another reason for his popularity is the words that are repeated at meal time, "pass the fish, please."

The Isaac Walton Lake (City Lake) at Roxboro is where I usually bream fish. The lake is well known for its fine catches of bluegills, and for its size I can truthfully say that no other lake has produced as many pounds of fish for the number of years it has been fished. The lake consists of two parts: sixty-eight acres were pushed out to begin the old part in 1921 and 22. In 1955, 142 more acres were completed to make a total of 210. Hurricanes Connie and Diane were responsible for filling the new part.

At one time, the lake was closed each year from April 20 to June 1 for spawning protection. Hubert Fox has been the lake warden since 1930 and he maintains that as many fish are caught now as were during the years of the closed season.

The most enjoyable way to catch the bronze warriors is with the fly rod, and top water lures. In my experience, the popper at times tends to scare the fish more than lure them. When referring to the popper, I mean any top water bug with a cupped or dished out head. The dylite plastic ones for all around fishing will catch more fish than cork bodies. Using a fly rod speeds up and trains your reflexes.

Take the time I was anchored about 40 feet from a bed using a fly. It looked like a bream day with fish swarming over the carefully fanned out beds. I caught several, splashed them in a bucket and started casting again. When bluegills are bedding in clear water from several inches to a couple of feet deep it's possible to observe some of the fish just about all of the time. They like to hang just under the surface; this way, no fish or animal can come around without being spotted.

Coils of line shot out, the cast was true, the bug settled lightly beside a stump. Just as the lure hit, a fish in the bucket splashed. I had already "set the hook" before I realized where the noise was.

One morning about nine o'clock I put my fly rod in the boat and started up the old lake. Nearing the upper end I slowed down to check a place that usually harbors a bream bed. Bluegills generally use the same spawning areas year after year. Easing the boat along I spotted the saucer-shaped nests under a willow tree. The group was about three feet to the right of the place from last year. After anchoring about 60 feet from the bed I began

Bluegills spawn from mid-April in Coastal Plain waters, to late June in the cooler waters. They seem to double their eagerness to strike when they are spawning but they provide good fishing almost all summer.

working out fly line. The bed had been swept out recently because the females were finning around the outer edge. The beds about three feet from the shore were under about 18 inches of water and the male fish were huddled together between the shore line and the beds. With water this clear it was possible to see most of the fish as they circled and patrolled the outer edge of the bed.

The fly landed lightly about six inches short of the females. A large one hit almost the same instant the bug hit the water. As soon as the fish felt the hook, it tried to get under the tangle of limbs that sheltered the beds. Failing to reach anything to tangle the line, the bluegill shot out to deep water to finish its fight.

When fish are bunched this way whether bedding or just milling around—its best to cast on the edges and never directly over them. Bream in the 12 ounce to a pound class can put a nice bend in a light fly rod and the action was fast and furious for 30 minutes. It was a strain on the rod to keep the fish from getting under some brush beside the beds. The males continued to rush the fly as it touched the water, smashing it as only a bluegill can. After hooking two more males the rest quit charging the fly and backed up as far under the brush as possible.

I took 14 females from the same place before they wised up. It would take a while for the rest to forget the short lesson. An experienced fly rodder knows after a few casts whether the fish have been exposed to a bombardment of flies. As fish are caught off the beds, new ones move in and replace them. These are usually the ones that take the offering. When beds are worked hard by anglers, it's usually best to move on after catching three or four fish. This is particularly true of beds in shallow water that are visible from a boat.

This is a fine example of one of our scrappiest fresh-water fish, the bluegill. This "pound bream" was taken on a small spinner, a deadly lure.
JOEL ARRINGTON

Another morning up the old lake, I spotted two nesting areas in shallow water about 100 feet apart. After easing the boat between the beds I lowered the anchors as quietly as possible. Bream are easily frightened into deep water or can be spooked enough to keep their mouths shut. The beds to my left had been swept out under a tree that was lying in the water. The beds to the right were surrounded by stumps and logs. After making a few false casts, I laid the fly over the submerged tree. A hump-backed male pounced on it with both feet. Keeping him out of the tree was a job, but soon he could be led to the boat.

After catching three fish, the action ceased so I started working the other bed. They were harder to convince, but after several casts one nailed it. When catching bluegills in stump-studded waters, it is easy for them to get tangled in any available cover. Holding the line firm most of the time will cause the fish to untangle himself. By alternating the beds, I was able to take 20 males before they stopped biting.

When working beds in shallow water I use the fly rod first; after they quit hitting on top, I use spinner and worms. At times it seems impossible to get bream to hit anything. Adding a v-shaped pork rind to your fly at times gives the additional appeal that makes the difference between pass up or strike. Another good trick that produces at times, is twisting your leader; it makes the fly roll over in an apparent effort to get upright and fly away.

At the lake there are boats for rent, motors, one-day permits, and fishing tackle. There is also a snack bar open for the public during fishing hours. Now's the time, and you better hurry; next week may be too late!

A New Live Trap For Capturing Small Mammals

by Robert F. Soots, Jr.
Dept. of Zoology, N. C. State University

FRED S. BARKALOW, JR.

Black vinyl plastic is held in place around the trap by rubber bands. This affords the confined animal protection from weather and harassment by predators.

IN an investigation on the biology of a game species it is frequently necessary for the research worker to capture, mark and release unharmed, a number of individuals in a population. The success of our study concerning the effect of artificial nest boxes on gray squirrels which was begun in 1956 under the sponsorship of the North Carolina Wildlife Resources Commission depended not only on our ability to capture gray squirrels in some numbers but also upon the development of a technique for censusing them. The census procedure selected called for the simultaneous employment of 100 live traps on two 100 acre tracts—a total of 200 traps to be run daily over a 13 mile trap-line. The traps had to be strong enough to protect the captive animal from injury by predators yet light enough so that ten could be carried at one time. Also, the traps had to provide protection to the confined squirrels from inclement weather.

From 1958 through 1964 many different designs, including those of commercial manufacture, were tested under actual field conditions. A total of 898 gray squirrels were captured from one to 29 times each in the various live traps used. In addition to gray squirrels, we took in descending frequency-of-capture order the following: flying squirrels, cottontail rabbits, raccoons, white-footed mice, eastern chipmunks, opossums, longtailed weasels, black rat snakes, black racers, pine mice, and several species of birds. The weasels and snakes were undoubtedly attracted by mice activity inside the traps. It is unlikely that either of the predatory species were attracted by the corn bait.

The Trap

The construction details for our most successful model are shown page 26. This trap is adaptable for use under a variety of conditions and for many different species of small mammals. The wire mesh which proved most satisfactory was ½" x ½" x 18", galvanized-after-welding, 14 gauge, iron wire manufactured under the trade name "Perma Gard" by Gilbert and Bennett Mfg. Co. Not a single squirrel was able to cut through the wire mesh and neither foxes, raccoons, nor dogs were successful in tearing a hole in the trap to prey upon the captive animals. The door and treadle of the traps were constructed of 20 gauge galvanized sheet metal. The outside and inside door frames were made from ¾" x ¾" x 1/16" and ½" x ½" x 1/16" angle aluminum respectively. Bronze ⅛" welding rods were used for the trigger and treadle mechanism.

A live trap shorter than 18" with a drop type door was found to injure the tip of the tail of most gray squirrels and all later models were made with 18" or 20" width wire. The construction cost of the trap described is approximately $6.00 when made up in small numbers. The traps could probably be mass produced for about half this amount.

Black vinyl plastic wrapped securely around the trap and held in place with two rubber bands (see above) was found to be very effective in protecting the captive squirrels from the weather and harrassment by predators. The rear of the trap was left uncovered to provide ventilation for the confined animals.

Prior to the selection of the welded wire, ¼" mesh woven hardware cloth was used. Squirrels frequently escaped by teasing and gnawing the wire until the strands were forced far enough apart to enable them to squeeze through the hole and escape. Even small raccoons were able to almost completely demolish the woven wire traps, whereas, they were capable of only bending the treadle and trigger rods in the newer model trap. The soft welding rods could be quickly and easily straightened after the raccoon was released.

Unwanted Guests

Nuisance squirrels may be live trapped and moved to another area but a permit for this purpose must first be obtained from the North Carolina Wildlife Resources Commission. Permits are required to live trap and move nearly all species of wild animals in North Carolina.

Incidentally, if you want to remove that pesky squirrel from your pecan orchard or attic he should be released in a woodland at least five miles away from the point of his capture. Squirrels moved only a short distance will frequently return.

A period of prebaiting will

• **continued on page 26**

DEPARTMENT OF LETTERS TO THE EDITORS, FIELD NOTES, AND ITEMS OF INTEREST

Conducted By Rod Amundson

Unless they happen to be in the publishing business, few people are aware of the toil, and sometimes turmoil, that goes into publishing a monthly magazine—or the time involved. This issue of WILDLIFE was begun last March when articles were proofed and edited, illustrations prepared and general layout planned. Some of the articles were written weeks or months before they reach Managing Editor Duane Raver's desk for final editing. Some of the pictures were shot especially for this issue, some taken from the files of prints.

Many people ask how we go about getting color pictures for our covers. Some are color photographs taken by our own personnel. Some are from original paintings by Duane Raver. Many come from the free lance artists from all over the country. These we buy for one-time use and return them to the artists.

One of the biggest and most exacting jobs involved in publishing WILDLIFE is getting it out to subscribers within a reasonable length of time after individual subscriptions are received. To some of our subscribers this length of time sometimes seems unreasonable. Here is the way the process works:

Incoming subscriptions go first to our Division of Finance and Personnel where the subscriptions fees are recorded and deposited. Names and addresses then go to the IBM section where they are recorded on punched cards and filed in accordance with the ZIP system.

From these cards the entire mailing list of some 92,000 is run on a continuous tape and sent to Graphic Press, which is under contract to put the magazines in the mail. The mailing list usually runs on the 20th of each month. This means, for example, that a subscription received in the mail after the 20th of May cannot begin until the July issue. This may seem like a long wait, but it is the policy followed by most monthly publications.

The process could be speeded by sending out individual copies from the Raleigh office, but a copy mailed singly costs nine cents for postage alone. At a subscription rate of only 50 cents per year, this would be far from economical. Under second class postage rate, the regular list goes out for about four cents per pound.

To keep the list accurate it is necessary to process changes of address. Out of 92,000 subscribers, this amounts to hundreds of changes each month. All too often, subscriptions come in with inaccurate or incomplete addresses. These cause considerable delay in getting the magazine out to subscribers.

If you were a long time in getting your own magazine sent to you, we hope that the above will help to explain why.

Conservation Roundup

The 6th Annual Fontana Conservation Roundup is scheduled for June 9-13, 1965. Keynote speaker is to be the Honorable George B. Hartzog, Jr., Director of the National Park Service. The theme of this year's Roundup is "Uniting For Conservation", and this topic will be discussed by outstanding leaders in the fields of soil, water, forests, and wildlife. For details, write Dr. Roland McClamroch at Fontana Village Resort, Fontana Dam, North Carolina.

Recruit

DEAR SIRS: Please renew our acquaintance with this wonderful magazine. Our entire family enjoys each issue.

My 16 year old son often draws pictures from your covers or other items of interest. Please tell us where he can get information as to requirements for becoming a Park Ranger. He seems interested in this field of work and now that he is in high school, would like to take subjects that would be of best use.

We often attended Audubon shows while we lived in Miami, and I think that started him off with such an interest in any phase of nature studies. MRS. W. S. GIBBONS, LA GRANGE.

Contact the National Park Service, Washington, D. C.—Ed.

Good Advice

DEAR SIRS: I have taken the Hunter's Safety Course offered by the National Rifle Association of America and I encourage every young hunter to do so. I have learned more about hunting and the care of my guns. Under my instructor, John H. Wells, I have learned the safety rules, which, if followed will keep hunting a safe sport. I hope, if possible, you can print this so that it may encourage other boys to take this course. I also hope that this magazine will recognize some of the safety instructors who have spent their time to teach the safety rules of hunting to others. DANNY BOYKIN, BAILEY.

Yankee Wisdom

Wildlife magazine, and, indirectly, the Wildlife Resources Commission received a fine compliment from a group of Connecticut sportsmen. George S. Bennett, Conservation Chairman of the Woodbury-Southbury Rod and Gun Club, sent a letter to *Wildlife* enclosing a check for $144.00 for 288 subscriptions for members of the club.

To give you an idea of the activity and vitality of this club, the initiation fees for new members include five hours of field work in conservation. That figures up to 1,440 manhours of field work by the present membership. Ed.

Time for Action

DEAR SIRS: The article written by John P. Hardister—"Dog: Man's Best Friend," which appeared in the February issue of your magazine is very much appreciated. I feel that control of free-ranging dogs is a major problem in wildlife management not only in this state but many others also. Mr. Hardister stated the facts well.

We definitely need stricter legislation and more education on this subject. Let's keep at this problem now and see that something is done about it. VERNON D. CUNNINGHAM, RALEIGH

We hope that some day people and the dogs they own will cooperate to this effect. Many more North Carolina counties could have deer hunting, for example, if people and dogs would give deer a chance to survive.—Ed.

ANIMAL DISEASES

• **continued from page 19**

the Department of Microbiology and Preventive Medicine of the University of Georgia School of Veterinary Medicine at Athens, and the Georgia Department of Public Health at Atlanta. Drs. Harold B. Hubbard and John H. Richardson are Chief and Co-investigators respectively.

The major objective of this investigation is to study the ecology and epidemiology of an apparent new cycle of wildlife rabies. Primary consideration will be for the relative population indices of raccoons in comparison with foxes, skunks, etc.

The significance of rabies to public health, domestic animals, and wildlife conservation constitutes a matter of considerable concern. Epidemiology investigations of rabies have revealed ubiquity of the disease which manifests itself without regard to environment, season, or species of animal affected. An epidemic of raccoon rabies began in the Lake Okeechobee area of Florida in 1959, and extended over 200 miles into north Florida by 1962. The dread disease soon spread into Georgia, and by 1963 eight south Georgia counties had become involved. Of the 85 cases of animal rabies reported in Georgia in 1963, seventy had occurred in raccoons. Prior to this time these animals had not been considered important hosts of rabies.

In summary it should be reiterated that each of the previously described programs is being conducted under the auspices of the Southeastern Cooperative Wildlife Disease Study in close collaboration with state game and fish agencies throughout the Southeast. This is the first joint-state research program established for the specific purpose of investigating diseases of wild animals.

Through an expression of confidence by Congressmen and Senators of the southeastern states as well as other regions of the Nation, congressional support has made possible the basic research aspects of these vital and unique wildlife disease studies. Interest of this magnitude affords an annual means whereby mysteries of devastating diseases among game animals can be solved. Of equal importance, research in this field permits unparalleled opportunities for investigating the relationships of game animal diseases to man and his domestic animals.

Present cooperation between southeastern state game and fish agencies and the federal government therefore constitutes a landmark in conservation which will be reflected eternally in our Nation's wildlife heritage. This approach to exploring the many dark avenues of wild animal diseases is equally applicable to other regions of the United States. ◆

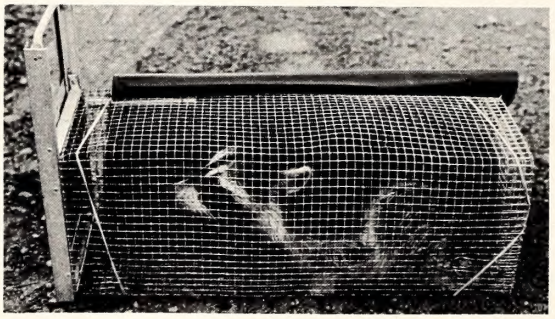
LIVE TRAP

• **continued from page 24**

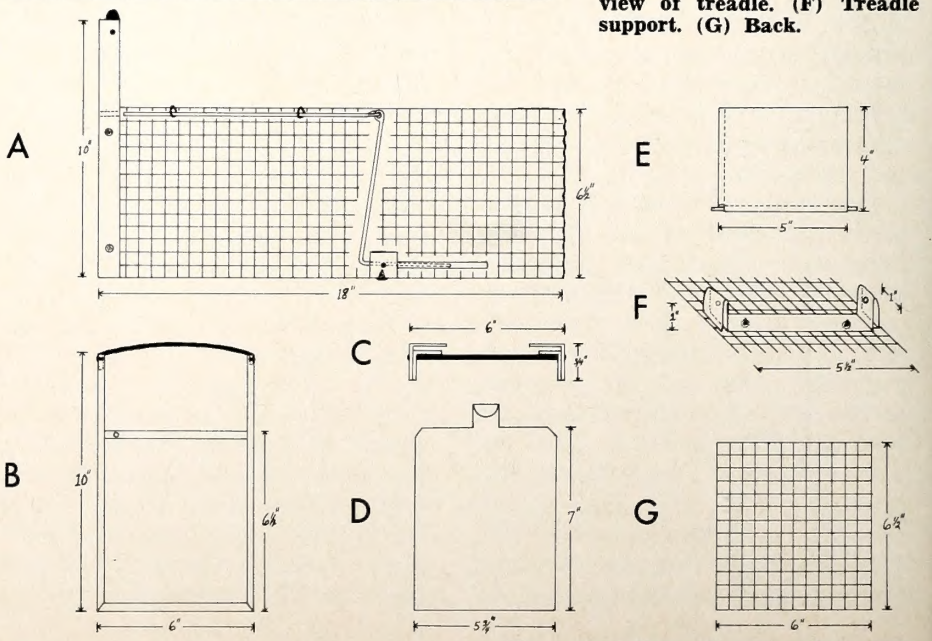
greatly increase your chances of catching squirrels. Prebaiting can be easily done by scattering shelled corn around the trap and placing a handful of corn on the inside. The door is left off the trap until all the corn in and around the trap has been taken. The trap is then rebaited and set. Following a period of prebaiting, three or more squirrels can usually be caught in quick succession. If trapping success falls off, the door can be removed and the rebaited trap left unset until most of the corn again disappears at which time the trap can be reset and successful results obtained.

Getting Them Out

Animals can be easily removed from the traps by placing the open end of a burlap or muslin sack over the entrance of the trap as shown on page 27. When the door is lifted out, the animal will usually dart into the sack and can be confined near the closed end by placing your foot between the squirrel and the trap. The



The customer this time is a raccoon. The plastic cover has been folded back to show the animal. Any trapped animal should be handled with caution. The trap design is shown below. First quality materials should be used to insure that the small mammals will not escape. (A) Side view showing trigger. (B) Front view. (C) Top view of door frame. (D) Front view of door. (E) Top view of treadle. (F) Treadle support. (G) Back.



sack can then be slipped from the trap, the neck of the sack twisted shut, and the animal transferred to a carrying cage.

Care should be exercised in handling a squirrel in a sack for these animals are quite capable of biting the handler through the cloth bag. If the squirrel has to be handled it can be worked toward the mouth of the sack and the sack twisted carefully behind it

The author demonstrates how easily animals are removed from the trap by placing a burlap bag around the entrance.

to prevent it from returning to the bottom of the bag. With the squirrel in the constricted portion of the sack it can be grasped gently but firmly around the neck and shoulders with the left hand. The sack can then be folded back over the left hand and forearm thus allowing the squirrel to be examined, released or placed in a holding cage for transfer to its new home. Squirrels can be easily injured when seized with stiff leather gloves and their use is not recommended.

In retrospect, it can be seen that the trap is effective and humane. The light materials used in its construction are sturdy and make it possible to carry several traps at one time. Also, the trap is not easily damaged and in most cases it can be repaired easily. Our trap was designed specifically for gray squirrels, but modifications in size would make it useful for capturing other small mammals.

Left to right, Chester Arnold, Russ J. Neugebauer, Frank Copeland and Turner Battle.

Members of the Alamance County Wildlife Club have long been known as hard workers by citizens of their home county, but it was only recently that even they knew just how hard the club members worked to bring their club to the level of being one of the best in the nation.

Recognition came on the national level as Russ J. Neugebauer of the National Wildlife Federation flew down to Burlington-Graham from Washington to present the President's Award to the club. Club President Frank Copeland accepted the award and commended members for their efforts in making such an award possible.

The plaque was one of 22 presented on behalf of National Wildlife Federation President Louis D. McGregor of Flint, Michigan. The 22 clubs honored were selected from the more than 8,000 NWF affiliated groups throughout the country.

On hand to commend the club members were Chester W. Arnold of Greensboro, president of the N. C. Wildlife Federation; Turner W. Battle of Rocky Mount, executive director for the Federation, and Eugene Schwall of Raleigh, assistant director of the N. C. Wildlife Resources Commission.

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No Place Like Home

In forests from which hollow den trees have been removed, the artificial nest box provides a dry, spacious, refuge for tree squirrels. Artificial nest boxes are frequently chosen by wild gray squirrels in preference to available natural dens. This 10 month old gray squirrel in full winter pelage investigates a nest box. (See page 9).

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Wildlife IN NORTH CAROLINA

JULY, 1965

KARL MASLOWSK

BIG WORLD

What's beyond the mossy log for this young female red fox? It probably seems like a big world and may be one full of danger as well as adventure. It will take all of her cunning for her to see her third birthday.

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WILDLIFE IN NORTH CAROLINA recognizes the need for close cooperation between State and Federal conservation agencies and the people who hunt and fish—to bring about a restoration of our renewable resources. The Editor gratefully receives for publication news items, articles, and photographs dealing with the North Carolina out-of-doors, but reserves the right to reject materials submitted. Full credit is given for all materials published.

* * *

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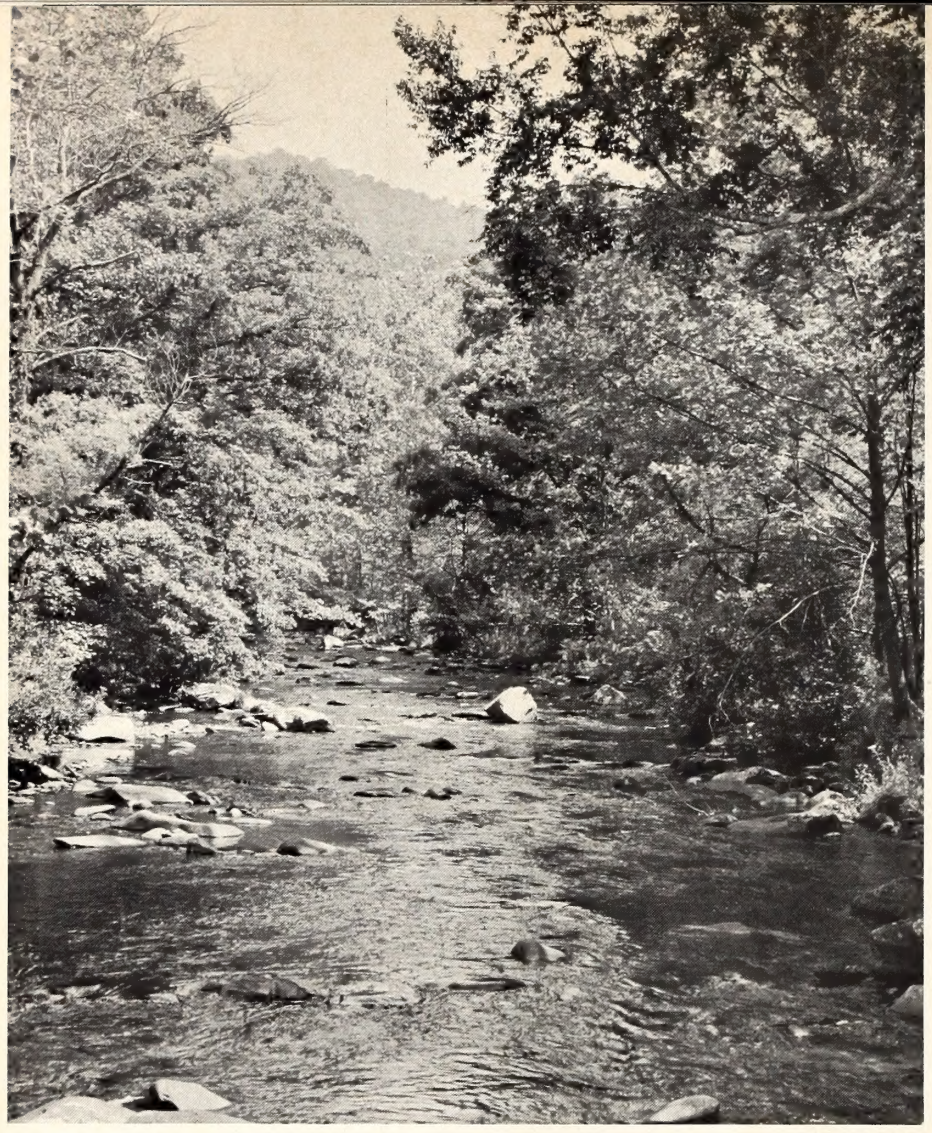
JOHN PARKER _ _ _ _ _ OUTDOOR SAFETY

Most self-respecting fish will soon be heading for the deeper, cooler waters for the rest of the summer. This bluegill is already fanning the gravely bottom of his home. It takes a bit more prodding now than back in the spring to bring them up to a bait. For better bluegill catches, you either go down to them (with a gob of worms), or wait until evening when they meet you half way. Ektachrome transparency by Joel Arrington.



JACK DERMID

This is Hazel Creek, cold, clear, full of trout. Wish you were there?

In the Great Smokies

Backpack Trout

by H. Lea Lawrence

DUSTY slipped the pack straps from his shoulders, sat back against a tall beech tree and heaved a long sigh. He looked at his feet, then let his gaze wander over to a long, smooth pool in the stream a few yards away.

"If these hoofs of mine were willing," he said, "I'd order them to take me to that lovely pool so I could fish it." He sighed again, then added: "But after what I've just put them through, I'm afraid they'd mutiny before going even one more step!"

I was painfully aware of what he was talking about, being propped in a similar position while my feet and legs rested. And the other member of our party, Bud Larsen, was nodding sympathetically while Dusty talked. The lure of the superb trout water was powerful, but for the moment, at least, letting our tired muscles loosen was more important.

We had reason to be beat. Behind us lay eight miles of some of the roughest country in the Great Smoky Mountains National Park. Early in the morning we had dropped off the high backbone of the mountain range at Silers Bald and followed what was only the slightest hint of a trail down into the Hazel Creek basin. The walk had been a muscle - tearing, back - breaking trip through laurel thickets, over deadfalls, and, later innumerable crossings back and forth over the stream.

Actually, this was the last two-thirds of the entire walk. With three days allotted for the trip, we had originally planned to start in on Thursday morning. But we had managed to get away earlier than we had expected, so we made the first four miles Wednesday afternoon. This put us in as far as Silers Bald shelter on the famed Appalachian Trail, which begins up at Mt. Katahdin, Maine, and ends at Mt. Oglethorpe, Georgia, over 2,000 miles away. And in the Smokies the trail is passing through some of the most spectacular country in its entire length.

Bud was beginning to show some signs of life, and I had a feeling he would be digging in his pack for his fishing gear before long. While my legs felt like they could stand some more relaxing, I was also mighty interested in wetting a line. Dusty, on the other hand, had settled into an almost horizontal position and was beginning to doze.

I suggested to Bud that we set up camp, put in some firewood, then fish the rest of the afternoon. That way we would have until dark to sample the action uninterrupted.

ACTUALLY, getting camp in shape was easy work. We had packed a minimum of gear in with us, and our packs were pretty light. In planning our meals we had made an effort to utilize as much dehydrated and "instant" food as we could. When all the food was purchased, only the butter and salt were full-weight items. Yet our menu included beef hash, camper's stew, soup, eggs, milk, potatoes, bread, orange juice, fruits and a number of other things. It was evidence of the extremely wide variety of lightweight foods available today.

Both Bud and I were carrying Svea stoves, small, compact little jobs that are only 5½ inches high, but which perform well. On the trail on the way in we had prepared hot soup and fruit cocktail in a matter of minutes. And we knew the stoves would prove indispensable in rain-soaked woods where dry firewood is hard to find—a condition that hikers in the Smokies always can expect, since these mountains get a terrific amount of rain. The crest of the Smokies receives over 75 inches of rainfall annually, with July and August particularly wet months.

Once the tent was pitched, Bud and I began setting up our tackle. Dusty, who had slept through the operation of getting camp into shape, reacted quickly to the tiny tinkle of rods coming out of the cases. He sat bolt upright and was well on his way to rigging his own outfit by the time we had our rods together.

"What's the best bet, Lea?" Bud inquired as he poked through a packed fly book.

"What've you got?" I replied.

He proceeded to rattle off a list of patterns in a fashion that sounded like a hash-house waitress chanting a selection of pies on the menu. He paused after a dozen or so and looked at me.

"So far, so good," I said. "You haven't mentioned anything yet they won't hit. But keep trying if you want to. I'm still listening." He looked puzzled, almost as if he felt I was pulling his leg. Dusty had a twin expression of disbelief on his face.

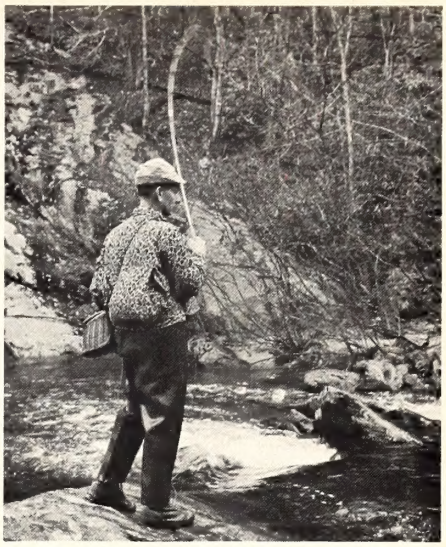
I wasn't joking though. After more than 20 years of experience on Smokies streams, I knew that the trout in these remote sections were about the most ravenous brand of fish in the world. I had actually tried to find a fly pattern they wouldn't hit on a previous trip, with no success whatsoever. The fish smacked anything I tossed their way! This isn't the case all the time, and it isn't always the case with the bigger, wiser trout. Yet occasionally even they will eagerly grab almost any offering. I know of one fisherman who spent a day on one of these nearly virginal stretches of water and had a strike, or took a fish, on every cast. It sounds unbelievable, but many of the streams in the Smokies, like Hazel Creek, are accessible only on foot, and have fabulous fishing.

This was my main reason for wanting to bring Bud and Dusty into Hazel Creek. Neither of them had ever before sampled any fishing like this and I wanted them to have a crack at this wilderness water. I had told them of the quality of fishing they could expect, but they still weren't convinced.

HAZEL Creek lies on the North Carolina side of the Smokies. The source of the stream is a spring not far from Silers Bald, where we had spent the first night. Once it attains reasonable size, there are over 16 miles of fishable water before it pours into TVA's mountain-rimmed Fontana Lake. No roads pass anywhere near Hazel Creek and there are only two ways to get into it—by the overmountain route we had followed, or by coming into the mouth of the stream by boat across Fontana. The latter route, however, leaves 16 miles of walking to the upper campsite at Hazel Creek Cascades, where we were.

There are three authorized campsites on the stream: one at the mouth, on the shores of Fontana; one 6½ miles upstream on the Boone Valley Creek tributary; and the Cascades site. No camping is allowed on any part of the stream, and a permit is required for camping anywhere in the Smokies. These permits, which are free, can be obtained from the park superintendent, National Park Service, Gatlinburg, Tennessee. This helps the park personnel keep parties within the vast confines of the park located. Too, it keeps fire watchers from mistaking campfires for forest fires, catching the latter early.

Both Bud and Dusty had a hankering to fish upstream from camp, so I walked below. My statements about the abundance of trout in the stream had them



JOEL ARRINGTON

Strike! Large or small, this trout will give a good account of himself.

moving at a fast pace as they headed away from me. Dusty never gets excited until he sees evidence, and terms himself a "cautious optimist." But he looked more optimistic than cautious to me!

I strolled down the stream trying to curb my own growing enthusiasm. Every pool I passed looked perfect, and I tried to catalog mentally the best approach to each as I passed it. The late August afternoon was enjoyable, and I wanted to soak up the full flavor of it as I walked along.

It felt good being back in this high, mountain country again. As I walked along through the dense stands of laurel and down the moss-blanketed trail, I thought of how long it had been since I had fished Hazel Creek. I spend a lot of time fishing the Smokies, but it had been quite a while since I had been on this particular stream.

It didn't seem that long, but my last visit had been in 1943. I had come in with my father and Jim Buckner of Sylva, North Carolina. This was just before Fontana Lake was impounded, and at that time a back road led into the lower reaches of Hazel Creek. At the end of this road was the old Hazel Creek Trout Club cabin owned by the group that controlled many miles of the stream then. The fishing was excellent, and we had enjoyed a fine day on the stream. But a

JACK DERMID

This is the Eagle Creek arm of Fontana Reservoir; a few miles to the right is the Hazel Creek section. These Park streams are accessible by boat across the reservoir. The other route is through country like that below.

year later, in 1944, the land passed into National Park hands, and the filling of Fontana covered the road that led in. Since then the area has reverted to wilderness, from which it was never far removed.

Actually, three fine trout streams flow into Fontana along its northern shore: Eagle, Forney and Hazel creeks. All, of course, are accessible by boat from the lake, and all can be reached from the Appalachian Trail. What's more, all offer breath-taking fishing that few fishermen are ever fortunate enough to experience.

Clingman's Dome, which at 6,683 feet above sea level is the highest peak in the Smokies, offers the best starting point for a hike into either Hazel or Forney creeks. A paved road leads to this spot, and cars can be left in the parking area there. This is the jump-off spot for the western end of the Smokies portion of the Appalachian Trail and it is a little over a dozen miles into either of the two streams from here. Eagle Creek, however, is best reached by crossing the mountains from Cades Cove, on the Tennessee side.

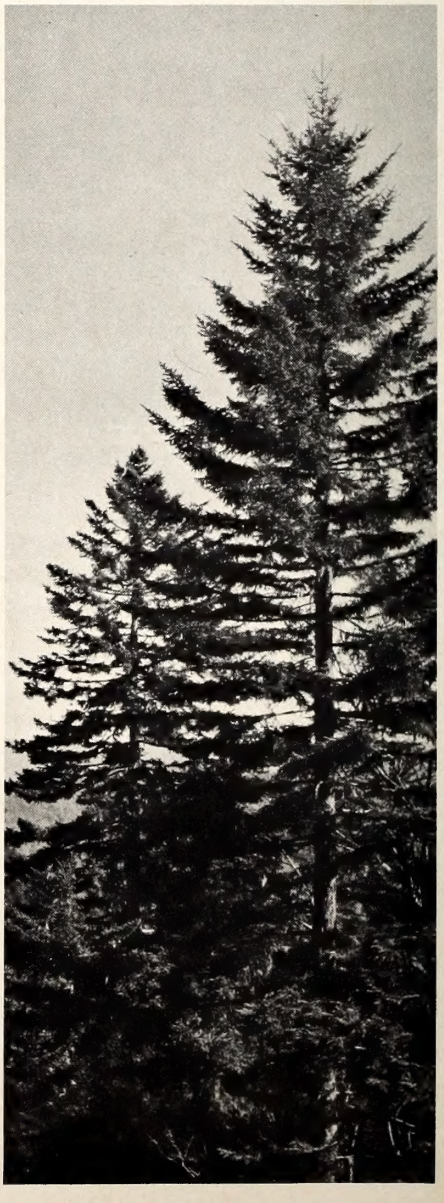
IT should be remembered, though, that packing into these waters is tough work, *and should be attempted only by seasoned hikers.* The 700-square mile area of the Smokies is rugged country, dotted with 16 peaks that jut above 6,000 feet, and most of it is wilderness. Many of the side trails are not marked or maintained. Persons not familiar with the region should stop at park headquarters in Gatlinburg and get detailed information from the Park Service prior to making any trips off the main routes.

I finally selected a long riffle that looked good and slipped into the water. I worked out line and eased into position to drop a cast in a spot under an overhanging patch of laurel. It looked like a natural spot.

I wasn't disappointed. The deer hair fly hadn't moved six inches when it disappeared into an explosion of spray. I raised the rod tip and the rainbow arched upward in a leap that carried it two feet in the air. It shook like a bulldog, flipped loose from the fly and dropped back into the water. A small fish, it might have scaled seven inches, so I was happy it had shaken free.

Three casts later in the same spot another fish smacked the drifting fly. I set the hook, expecting a repeat performance of my last strike. But this fish bored away instantly, darting upstream and going through all the paces before I netted it. It was a beautiful 10-inch fish, with a broad red stripe down its side that glinted in the tiny patches of sunlight that filtered down through the laurel. The park regulations require that fish under seven inches be released. There is a daily creel limit of five. Since we planned to have trout for supper, I killed this fish and slipped it into my jacket.

In the next hundred yards of



water I caught and released at least 30 trout in addition to the four more I kept to fill my limit. The trout in these high headwaters run small, with few fish over 12 inches. But what they lack in size, they make up in numbers and their terrific eagerness to tear into a fly. They also go mighty well pan fried over an open fire! I figured a cup of coffee would go well to top off this kind of action.

I beat Bud and Dusty back, but not by much. I had the coffee water boiling when they wandered in, both looking a little dazed, but smiling broadly.

"It's heaven I'm in, shure and begorrah!" Bud exclaimed. "I've caught fish on everything I tossed in the water!"

Dusty was equally radiant. He had taken seven fish from one pool without moving from his tracks. We had fish for the pan and were mighty contented fishermen.

Bud had taken several brook trout in addition to the rainbows. He had kept only rainbows, but the scrappy little brookies impressed him. They are found only in the high, cold waters of the Smokies, and many present-day fishermen have never netted one of them.

The following day was an expanded version of the first afternoon. Dusty went downstream with me, hoping to tie into something that would take his tackle away from him. His "cautious optimism" had vanished and he was dead set on putting a dry fly into the mouth of every trout in the stream.

We strolled along the creek casually, knowing we had plenty of time to fish all we wanted during the day. The high, sharp ridges of the Smokies jutted up above us, and the first rays of morning sunlight knifed down through the timber, speckling the trail here and there with spots of gold. Two ruffed grouse, feeding along ahead of us thundered off into the laurel. In a damp spot in the trail we saw a fresh bear track. The Smokies are full of these animals, so full, in fact, that they give the park personnel plenty of trouble. They gather along the main route through the park and raid garbage cans and campers' food supplies. Back in this remote section, though, it was unlikely that they would cause us much trouble. Our only precaution was to hang the pack containing our food well out of reach above the ground.

We had a humorous experience with the bears the first night at Silers Bald. When we arrived, just after dark, we found that four other hikers were already at the shelter. They were young boys, ranging in age from 16 to 19, and when we walked in they were ready to climb trees and sit out the night. Three bears had invaded the camp and had made off with a portion of their supplies. The four, from a metropolitan area in Michigan, hadn't encountered bears before, and they assumed these were ready to carry them off, too. They had lashed hunting knives to long poles and were set to do battle for their lives if the bears returned. When we explained to them that grub-stealing bears are as common at the trail shelters as the little white-footed mice that gnaw at campers' leftovers, they calmed down a bit. But still they kept one man on sentry duty all night, just in case.

I would have bet Dusty that he and I were the only persons within 10 miles on this stretch of the stream but a moment later I was mistaken. As we prepared to wade into the creek, I looked up and saw a ranger watching us. It startled me for a moment, and Dusty jumped, too, when he glanced up and noticed him.

He introduced himself, and asked to see our camping permit and fishing licenses. We had obtained five-day nonresident North Carolina permits by writing the Wildlife Commission's Raleigh office. He checked both items, then handed them back to us. It still seemed odd to me to be checked in such a remote place and I inquired if he wandered back into these sections often.

He explained that he was on a short "jaunt"—a 12-mile walk to the top of the range and back—to check the area. He said he made similar trips on foot two or three times weekly. The Ranger had brought a jeep up the stream 14 miles along a fire road that the park maintains for movement of equipment into these sections in case of forest fire. Only park vehicles are allowed on these roads, most of which are old railroad beds left from the early days when logging operations were set up. This, of course, was long before it was a National Park.

He left us and Dusty and I began giving the stream another workout. If anything, the action was hotter than before. Both of us were hooking and releasing, carefully, trout from every pool we fished. Many pools gave up six or seven fish.

We were limited up by noon, so we took advantage of the time we had left for an afternoon nap. Bud, who had returned to camp ahead of us, was already snoring peacefully when we arrived.

Over supper that night, Dusty remarked between mouthfuls of rainbow: "You know, I believe I could make a steady diet of this kind of food, and I know I could handle a steady diet of this kind of fishing! Furthermore, who would doubt that Hazel Creek could provide the makings for both?"

"You still a 'cautious optimist'?" I asked, wanting to hear him admit that he had let the barrier down during the last day and a half.

"Caution?" He mused "Heck, no! I will say this, though, I'm going to have to exercise a lot of caution to keep from spending more time than I can afford on this kind of water."

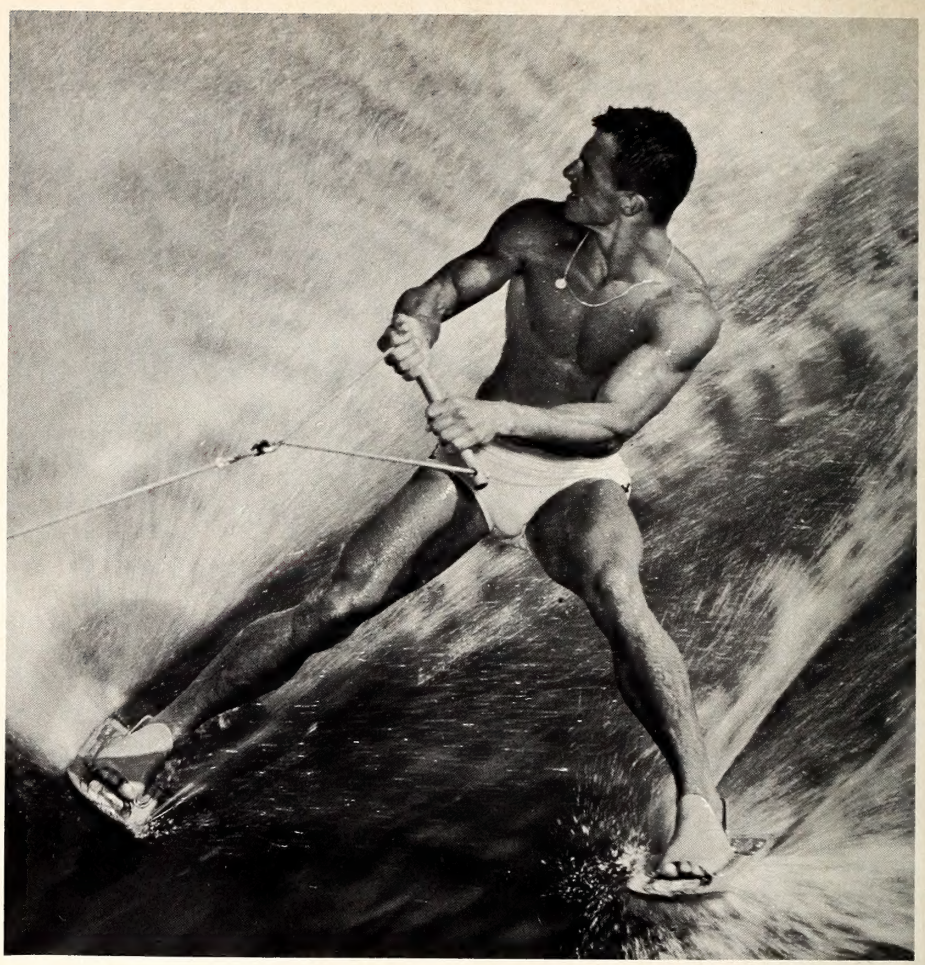
We broke camp the following morning and began the long grind that would lead us back to Clingman's Dome. Midway, a mountain rainstorm swept down on us, and when we arrived back at the car we were soaked and chilly. And plenty tired again.

But the effects of the trip showed up right away. Before I had driven two miles down the winding road, Dusty and Bud were laying plans for another trip to remote mountain trout water.

Where? Where do you think! ◆

Fun on Shoe Skis

by George Burdick



FLORIDA'S CYPRESS GARDENS PHOTO

Mike Osborn makes shoe skiing look pretty simple at Florida's Cypress Gardens. Don't expect this on your first attempt!

ALL skiing fanatics will tell you that learning to ski is merely the beginning of fun on the water. Water skiing becomes more exciting as you attempt new skills, and mastering the tricky shoe skis certainly ranks high as a most elusive objective.

The shoe skis, as the name implies, are small in size and can be bought in various shapes and designs. My own opinion, after having ridden several different types, including homemade shoe skis, is this: It's not so much the shape of the ski as it is familiarity with riding a particular pair.

Once you've selected a pair of shoe skis, the next step is to ride the pesky critters. Shoe-skiing could probably best be divided into several phases—getting up, staying up, doing tricks while you are up, and taking the spill. Let's consider each separately.

Getting Up

Skiing on regular skis requires a particular form which any skier will tell you is simple to acquire. Once you consider yourself an experienced skier with average ability, you are probably ready to get up on shoe skis.

Power is essential in your motorboat and I'd recommend about 45 horsepower, more or less, depending, of course, upon your weight. My weight is 165 pounds and most of my comments will assume that the reader can make allowances for any significant differences in the weight of an aspiring shoe skier and myself.

One easy technique for beginners is to use a third regular ski between your legs for extra lift. Needless to say, an experienced and trusted boat operator is a must. Tell your boat driver that he should wait until you have good position while being slowly pulled along at just over idling speed.

Good position means you are controlling the middle ski by sitting approximately on the binder and reaching around it for your tow-rope handle. Yell "hit it" when you are set, and try to distribute the water pressure among all three skis as you gradually pick up speed.

When you can feel the lift-pressure against the shoe skis being exerted, gradually place more weight on the shoe skis. After about 15 m. p. h. is reached, you'll be able to stand more erect and let the third ski slide between your legs. This could be a critical point, as it's possible for your third ski to bang against your ankles. To avoid this possibility, keep your shoe skis spread well apart. Obviously, no wide or long ski with metal braces should be used.

I prefer a banana-peel trickster as the third ski for three main reasons. It's light, smaller than most, and has no sharp edges or rudders to hit your ankles.

Once you are up, don't forget the ski that is left floating in the water. It should be picked up by a friend in another boat. *Never leave a ski floating on a lake unattended.*

Incidently, you can get up on shoe skis by using a free board. This is simply a ski with a means of making your shoe ski temporarily firm enough to ski on the free board until sufficent speed is acquired to step off on shoe skis. The shoe skis alone will be sufficient to get you up if your boat is powerful enough and you have the strength to hold on. I

require at least 70 horsepower to accomplish this. An inboard boat makes it much easier.

Staying up

Well, you're up and clicking along at a pretty rapid pace aren't you? Now the problems you'll face in staying that way!

First, and most important, is speed. Shoe skis are small, and do not have much lift, therefore, more than usual speed is essential. I'd say anywhere between 20 and 28 miles per hour, depending upon your skill and weight; I like to go about 24 miles per hour, as I can stand erect and it's a good 'speed for performing tricks.

Following a straight course is much easier than having some silly boat driver trying to throw you off by erratic changes in direction. *The boat should always take as straight a course as possible unless a skier requests otherwise.*

It's obvious that in a turn a boat loses some of its forward momentum and a skier could bog down unless compensations are made. Also going outside the wake in a turn could result in excessive speed for the skier.

Judgement on the part of skier and boat driver is essential in allowing the skier to maintain proper speed. This will come only with experience as you learn. Remember that all boats do not respond with the same power, even when put in similar turns at the exact initial speed.

A good rule-of-thumb for staying up on shoe skis is this: *Keep the speed over 20 miles per hour and make gradual turns.*

Performing Tricks

One of the most spectacular feats on water from the spectator's point-of-view is performed on shoe skis. This is the "backward swan" which is accomplished while riding backwards and lifting one foot out of the water.

I haven't told you how to get around to the backwards position. Tricks should be learned in a gradual progression and the backwards swan can be accomplished only after much practice with the more elementary tricks.

You should learn to ski backwards and do 180° turns on trickster or banana peel skis before taking on this trick with the shoe skis. However, being able to do 180° turns and ski backwards on tricksters does not necessarily guarantee immediate success with the much smaller shoe skis. The primary reason, of course, is the difference in speed. Since you are going much faster on shoe skis, you'll have to turn faster and make more of a conscious effort to lean away from the boat. Otherwise, everything is the same as for turnarounds on large trick skis. Remember five main points: bend the knees, keep elbows in close, eyes up on horizon, bank skis slightly and lean away from boat during the turn.

To accomplish the backwards swan once you've completed a 180° turn requires more speed than that required for the turnaround as one ski is to be lifted clear of the water. About 2 more miles per hour is what I require behind a 70-horsepower outboard. If you're behind an inboard, its power will keep you up for the turn on one ski with no change in speed if you have the strength to hang on.

One more point to remember is this: within every boat's wake there is an ideal spot for working with the shoe skis. Water conditions are more favorable for shoe skiing if you use an 85-foot tow-rope instead of the standard 75-footer.

The Spill

Some people might think that anybody can take a spill. I'll agree; and in fact, go them one better. Everybody can and will spill on the shoe skis, especially as a beginner.

However, there are right and wrong ways to spill and some people are flirting with possible injury by not following a few common sense rules. I'll list what I consider important while admitting that there are probably others:

1. Turn the two-handle loose immediately when you fall. A fraction of a second is all it takes to tear muscle fibers when the die-hard hangs on after being submerged under two-feet of surface water.
2. Wear ear plugs and always "cannonball-in" when you go head first, while covering your face with your hands and your ribs with the elbows.
3. Many ski-belts can be ripped off when taking a high-speed spill. Wear an approved model and make certain your boat driver picks you up immediately.
4. It is assumed that you have sense enough to ski only where the water is deep. Otherwise, a high-speed spill could easily result in your head striking bottom and I need not comment further on the possible results.

Let's suppose you are lucky enough to stay up long enough to actually desire a controlled landing. Once you're experienced you'll be able to maintain your balance until you slowly sink into the water.

For beginners though, the instructions are very simple. Just sit down and make a three-point landing well away from shore. Anytime you wish to stop immediately on shoe skis—*simply sit down.*

The next time you see a shoe-skier gracefully performing the backwards swan with his body being silhouetted through a 15-foot high spray, remember what it takes to acquire this skill. He has become an expert at his sport through months of practice, similar to that required for football, basketball, or baseball stars.

Water skiing offers us Americans an excellent opportunity to develop physically as a nation. There is no other sport, in my opinion, that does your body as much good while you are having so much fun. Also, no other sport is as available to the entire family.

The variety is never ending and the challenge unequaled. There is always something you haven't tried or some skill not yet accomplished.

Try the shoe skis. *It's fun!* ▲▼

Most Happy Fellow

by Jim Wood

JOEL ARRINGTON

HE was the most miserable old herring gull I had seen in my days of prowling the sea—his coat stained and unkempt and drawn as far as he could get into the beach grass. Shifty eyes followed us with not much trust; he didn't know what Jack and I had in mind but he knew it wasn't good for sea gulls. Amid much squawking and flopping and pecking we subdued him, and he was hurt. That was plain. A wing useless, and we had thoughts of trying some sort of splint, pen him for a while so it could heal, and put him back in his own land where his spirits would soar. Our ideas and his we were never able to negotiate.

Whether someone had emptied shot into him, or the wing was broken in some other manner we never learned. We rassled him to the car and into the back seat. I guess he liked human females even less because the fracas he started in the back seat was something to behold. So we tossed him without ceremony onto the sand and he went on his way down the rain-whipped beach. I guess he died eventually and it was inevitable the shape he was in. I felt a little sad as I watched the old fellow go. He was in bad sorts and not at all like the buccaneer in feathers we are accustomed to. A gull is, in his element, the most joyous thing on the wind.

This was years ago when we had more wild beaches than we thought we would ever need, but his progeny still fill the air with a grace that's hard to equal, and the job they do of sanitation would be hard to do without. Some play down his job of collecting, saying he lives on fish of different sorts mostly, and not garbage, but his business is immense. What's a dead fish but garbage? Gulls of all sorts are continually on the wing and I have no fear that it will be otherwise as long as the rigid bounds that exist now are continued. Gulls, whether wearing the raunchy coat of the Herring, or the debonair cap of the Black Head, are migratory birds and are protected by an act as strong as the Constitution.

THERE are so many gulls spread over so many miles of water that you could never know them all. It's a chore just trying to learn some of the populous ones. There is the Ivory Gull, the Great Black Backed, the Franklin and the California gulls, the Herring, the Laughing, oh, some 40 gulls all counted; so it's not hard to understand when a sea bird gets pointed out as a gull when he is no gull at all, but maybe a tern.

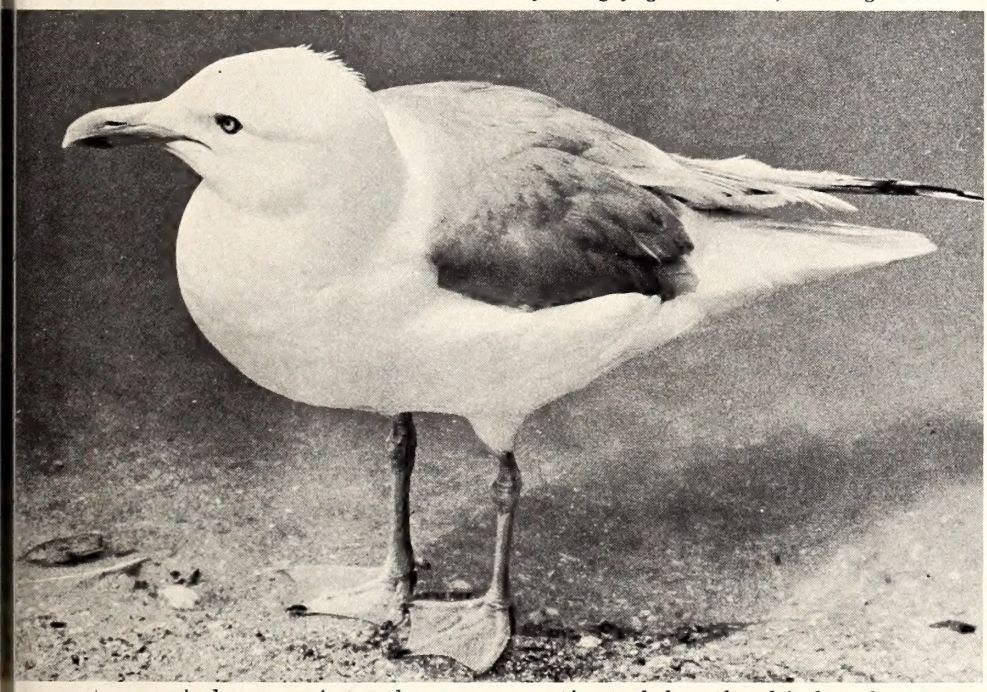
One strong identification point is the tail. Most gulls have tails in a squarish shape. Not true of every gull but most of them. Another the bill; the bill of a gull hooks at the end. A most curious mark on the adult gull is a red splotch on the lower jaw. I suppose the little ones would starve if this were painted out. The chicks pick at this spot to say they are hungry and mother disgorges a bit of supper. It's best to pick one gull, learn him well before starting the next one and a good one to know is the one we see most of—the Herring Gull.

The Herring is not the biggest but still plenty of bird. Two feet long, colored, for the most part, white with some gray across the back and along the wings to black tips. The dirty brown, dusky-looking birds traveling with the white birds are the youngsters. It takes them three years to grow a respectable coat.

In the spring they gather by the hundreds at some sheltered spots to start thinking about family making, many to Maine and north of that. The old ones usually have a mate for they keep the same one; but the young ones get quite carried away in courting, preening, feeding each other choice bits, a flirting and flexing of feathers. Not much unlike other creatures I am acquainted with that have been touched by love. He has one trait that I abhor of getting into duck nests and gorging on eggs but is not the worst offender in this. He

JACK DERMID

Left, an immature Herring Gull floats by effortlessly. Above, clams have been broken on an old bridge near Pea Island by hungry gulls. Below, Herring Gull.



gets carried away into the easy pickings at the garbage dump too often when he should be out tending his own cleaning area. But he manages to keep pretty well abreast of his chores, and finds time to sneak in a little fight occasionally, it seems to me just for the fun of it. Especially if it is a band of crows.

A gull is known for his raucous voice, the phrase "squawking like a sea gull" is in common usage, but a flock of crows can make more grating noise than anything I know of, and I can't blame him much for getting nettled. I have watched a brigand of these black souls sail out over the water many times to an aerial battle par excellent. The gulls spot them and the fray is on. Banking, a burst of speed, and yelling, and the crows were heading back to firmer ground in all possible haste.

Over the more familiar terrain of hard ground to the crows, the battle reversed. Back came the gulls with the crows snapping at tail feathers. This could go on for an hour with never a decisive victory, and it seemed never any intentions of one; just a merry chase for all. They could have a grudge. A crow is no slouch when it comes to waterbird egg-stealing.

Man's longing to fly was instigated by the birds of course, and though he hasn't flown in the exact manner of a bird, he has learned much from them, and picked off some features for his own use that birds patented centuries ago. The famed gull wing design in aircraft is one of the best known, and Glenn Martin put this to use in several of his flying boats. It was inverted and incorporated in the immortal Corsair of the War days. Martin, besides being an excellent plane builder, was an ardent goose hunter. They say his decoys weren't just chunks of wood like most of us know, but stuffed Canadian geese. Maybe he got the idea watching gulls while hunting.

Despite what the gull has given to aviation, he has been troublesome. An engine full of sea gulls is something that all fliers can get along without. I stayed at a small New England naval station for a spell, housing several anti-submarine squadrons, and gulls had to be chased off the runways during the day so the planes could get off. There was a garbage dump off the end of the runway and after gorging at the feast they like nothing better than to doze by the hundreds on the sun-warmed concrete. A truck would have to be run down among them and they moved grudgingly long enough for the plane to go by.

The Operations officer charged with safety of flight operations was at wits end. He had known problems but none that he couldn't work on and solve. He would have imported lions if someone had thought of it. He stomped into the armory one morning ordering the shotguns broken out—said he had the cure for gulls. The Gunnery officer and I went with him to the runway and he was passing the "cure" for gulls. I had reservations as soon as I learned what it was: an explosive shotgun shell loaded in Japan.

We shot two or three boxes from fifty yards and they exploded over the gull's heads. Some rose up a few feet disgruntled and settled back to the runway. Some didn't bother to move. The Commander, an old slipstream burned pilot for 25 years was mad enough to cuss, and he did. They were brother airmen but they didn't speak the same language. I guess they are still sitting there.

Duck hunters who are gamblers enough to figure all the odds in quest of their prey, will at times take the trouble to make up a couple of wooden gulls while they are carving and set them to the side of their decoy spread when hunting ducks. They maintain a gull or two tells a flying duck that all is well about there, and that ducks know a gull's habits won't take him where

danger lies. I don't think a gull is smart enough to rate this respect from a duck, but a gull swimming about is a natural thing and certainly an eye catcher to a flying duck.

Gulls have learned by now that man isn't going to bother him much, and he gets in trouble this way. On occasion he beats a fish to a baited hook and a gull on rod and reel is a whole lot of fight but no piscatorial joy. A gull never was much for diving but is surely adept in snatching up a mouthful of food before it sinks. And in plowing time an almost astonishing sight the first time you see it, is a band of gulls following in the wake of a plow picking up the fattest grubs, yelling for more.

The little Franklin Gull is widely known for this in the Dakota farm country, the folks affectionately call him "prairie dove." Utah people aren't halfhearted in their feeling for the gull. They erected a statue in the capital specifically in his honor. Seems that in the middle 1800's in Utah Territory the crops were overrun by black crickets. People in new lands are in bad shape if they lose a crop. Out of nowhere, far from the sea, great flocks of California Gulls came, and soon the crickets were controlled. The California Gull is much like the Herring. So it isn't hard to understand a statue to a bird of this caliber. The farmers of Nevada were glad to see this same gull on an occasion when field mice moved into their alfalfa fields and were having a huge time of haying. The gulls came and the mice didn't last long.

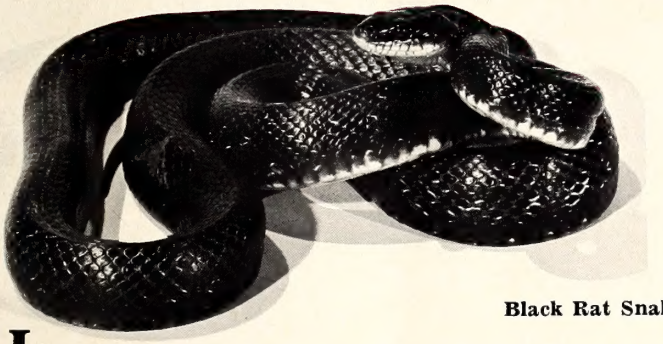
I am far enough from the sea now that I don't see as many gulls as I would like. I see them on occasion and would like to see more; I miss these birds. A man on the lake recently didn't believe he was seeing gulls as he watched them sailing. I assured him they were nothing but gulls.

All gulls are voracious in appetite and range from the garbage dump to the sea without much favor. He will try anything once and most things twice, and because it has a shell around it doesn't immunize it. Many a clam has found himself a hundred feet in the air, falling to the rocks to be splattered for a gull's leisurely feast. Some highways near the sea get hazardous at times for fast driving because of this clam-breaking trick they use on the roads. A broken clam shell can rip a tire in a moment. One camper trying to get a few more winks of sleep in his pickup camper was puzzled for a time at the rappings that persisted at intervals on his roof. He finally discovered the source of the bombardment. A gull was breaking clams on top of his camper. But some are not so wise and another might be over a ways dropping clams on sand not hard enough to break them.

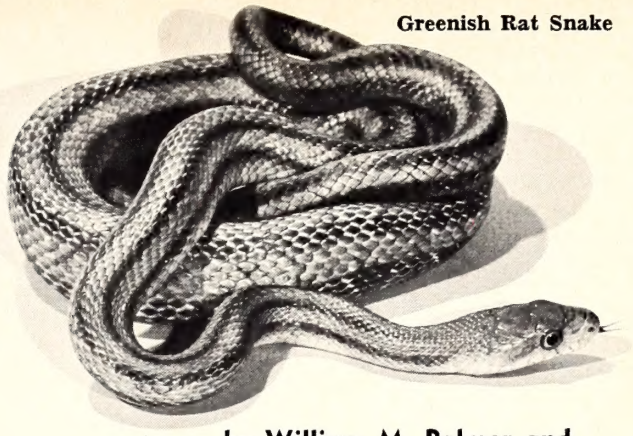
Yes, I would hate to ever see them go. They are a nuisance sometimes, but what would a harbor be without a gull? It would be dirtier for one thing, and lonely for another, and more than that it would lose much of its charm. The sea would lose part of its heart without the gull, the shore part of its soul. The lonely miles of sand would never know its company, nor man its grace of wing. The sailor would lose his last goodbye from a friend far at sea, the wind would lose its staunchest friend. No more pranks, and laughs, and pleasure, and labor from the sea's most happy fellow.

". . . without the gull, . . . the lonely miles of sand would never know its company, nor man its grace of wing."

The Rat Snake



Black Rat Snake



Greenish Rat Snake

by William M. Palmer and Franklin F. Snelson, Jr.
N. C. State Museum of Natural History

LOCALLY known as "chicken snake," the rat snake, *Elaphe obsoleta,* is one of the most abundant and widely distributed of all North Carolina snakes. This big constrictor is represented in the State by two subspecies. An inhabitant of the Piedmont and Mountains, the black rat snake is one of the most common snakes in these regions. In the lower coastal plain the black form is replaced by the yellow rat snake. Specimens from many localities in the middle and upper coastal plain apparently are intermediate between the two races.

The black rat snake is glossy black, often with scattered flecks of white confined largely to the skin between the scales. This snake is often confused with the black racer; however, the latter snake is quickly identified by the presence of a uniform slate-gray belly and a *small patch of white under the chin.* The underside of the black rat snake is typically white and gray, the white being dominant on the chin and *upper portion of the belly* and the gray toward the tail. The yellow phase of the coastal plain actually tends to have a background color of olive-green or dirty olive-yellow with four distinct longitudinal stripes.

It is not often confused with other species. The coloration and pattern of those specimens from "intermediate areas" may vary from dark olive and brownish to gray-black with stripes weakly visible or lacking. Only the eastern coachwhip rivals the black rat snake as the longest of our native species. The record length of the black rat snake is almost eight and one half feet, and the largest examined from North Carolina measured slightly over seven feet. Several specimens of the yellow rat snake which exceeded six feet have been collected.

This group of rat snakes, with its many complicated and problematical subspecies, ranges throughout most of the eastern United States, being absent only from several of the extreme northern states. The distribution extends westward well into the prairie regions.

The habitat varies and may range from wet bottomlands in the coastal plain to wooded hillsides and hardwood forest in the Piedmont and Mountains. In the preferred habitat, specimens are commonly discovered about barns, wood houses, or abandoned sheds. Both races are agile climbers and are often found in large trees and among the rafters of partially dismantled structures.

The local names of "chicken snake" and "chicken-eater" are somewhat inappropriate for this generally persecuted species. Although sometimes discovered around poultry houses, and occasionally found feeding upon the eggs and young of domestic fowl, its predation upon eggs and chickens is grossly overestimated. The primary food probably is represented by the numerous rodents and small mammals so common in the habitat. However, when the opportunity offers, most rat snakes do not hesitate to feed upon birds and their eggs. Juvenile specimens have voracious appetites and feed to a large extent upon frogs and lizards.

Breeding occurs in the spring and 6 to 24 eggs are laid in June or July. Incubation takes place in rotting wood pulp or similar decomposing materials. The young are from 12 to 15 inches long at hatching in the late summer or early fall. Juvenile rat snakes are distinctly different from the adults with regard to coloration and pattern. The young are light gray with a row of distinct dark blotches down the back; a single series of smaller blotches, alternating with those down the back, is present along each side. This pattern and color normally is lost by the time the snakes are several feet in length; occasionally, however, large adults possess traces of the juvenile pattern.

In captivity the rat snake feeds readily and makes an interesting specimen for observation. It does not, however, assume the gentle nature so characteristic of its close relative, the corn snake. Handling is often resented by most examples.

Although a potential menace when occurring in the vicinity of poultry yards and bird houses, rat snakes should be left unmolested in wooded habitats. Their extensive predation upon rodent pests more than compensates for the eggs, birds, and occasional chicks that are included in their diet.

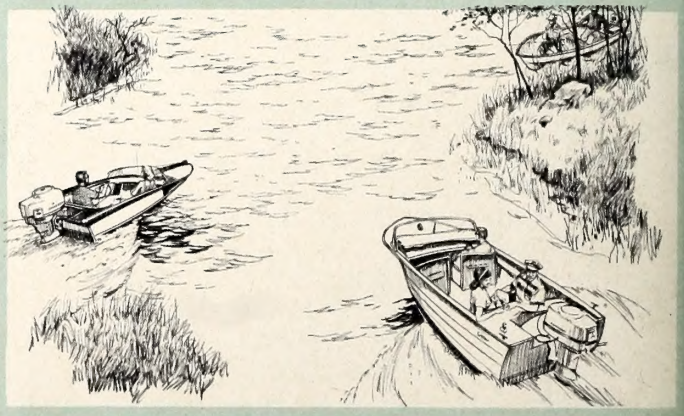
Next Month: Scarlet Kingsnake

"Golde

Boating accident rep
need to exercise mor
in AREAS similar to

CONGESTED AREAS present the boater with many problems. Traffic usually is heavy, obstacles numerous, accidents waiting to happen. This ski boat has no business here. Slow down around docking areas, fueling piers, etc.

OPEN WATER may lead to over confidence. Keep a sharp watch for floating objects, submerged obstacles, and high-speed boats. Remember, chances are that you're not alone out there.



INTERSECTIONS AND POINTS mean reduced speed and extra caution. Don't cut points too closely, stay in the channel, and always yield the right-of-way to avoid collision.

"KEEP TO THE RIG

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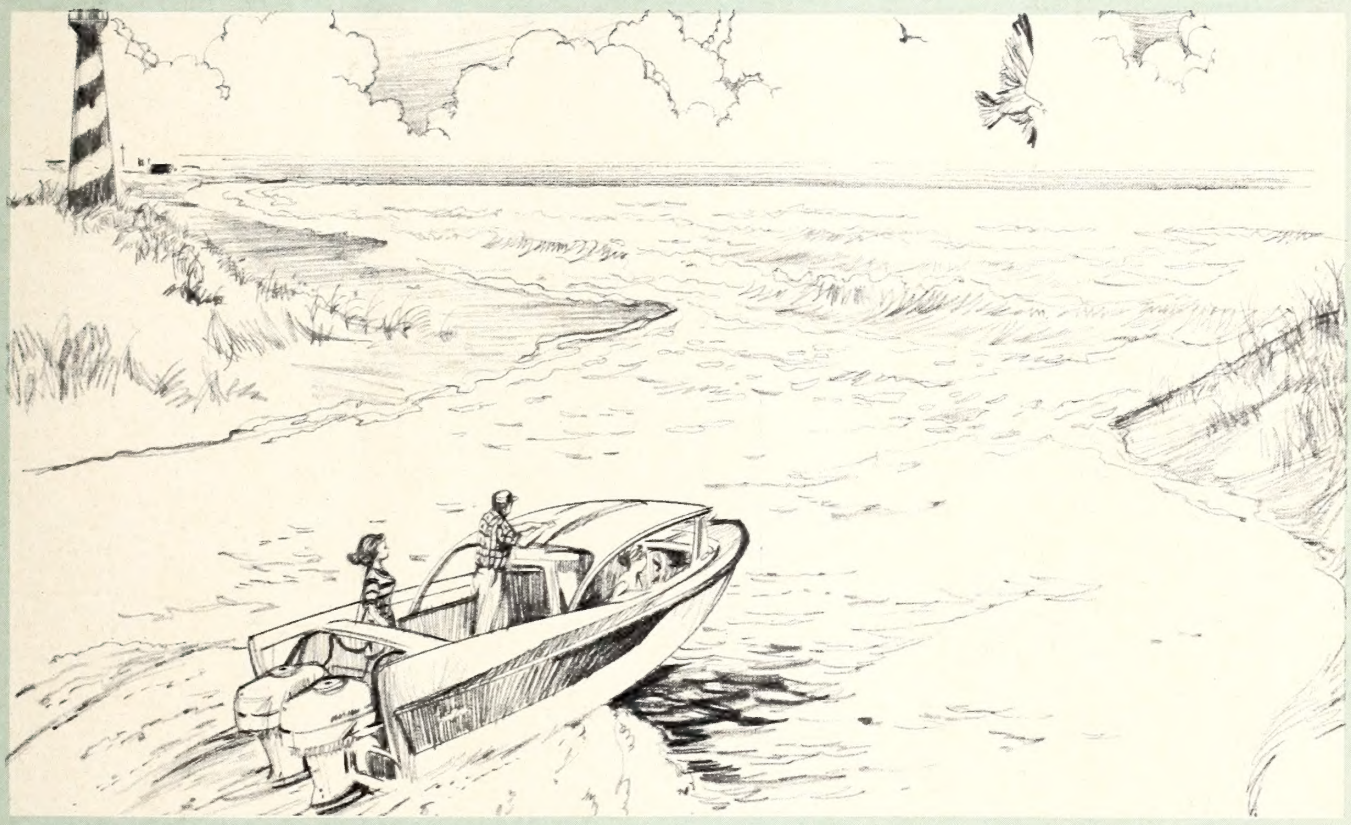
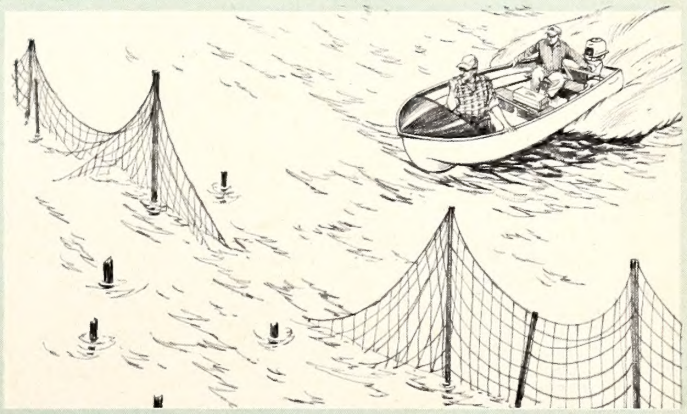


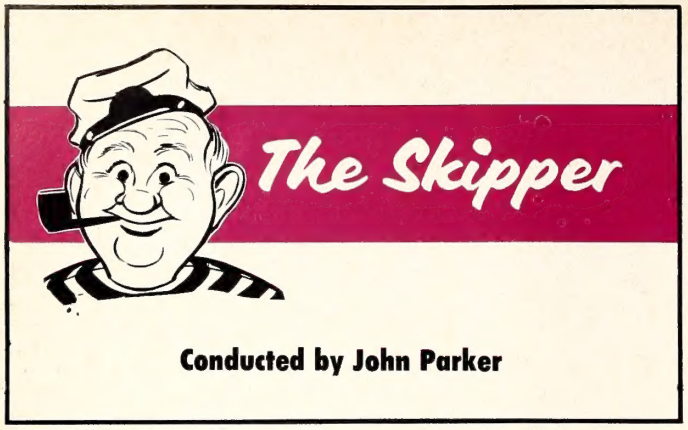
INLETS can spell real trouble for any boater, especially the inexperienced small craft skipper. Don't let the lure of the blue water displace your good sense. If there is any doubt about your boat or your skill, stay inside the inlets.

BRIDGES AND PIERS are potential danger areas because of funneled traffic, underwater obstructions, current, etc. Don't make them part of an obstacle course at high speed.



NET AREAS are frequent hazards in coastal waters. Submerged net stakes, gill nets, and pound nets may be difficult to see. Take it easy when in these fishing localities.

AND SAFETY FIRST"



Conducted by John Parker

THERE are many topics in the world of boating that we could menton in this column. We could discuss the new hull design of 1965, a cruise on the inland waterway, etc. Any one of a hundred items would be more pleasant than summarizing the boating accidents that occurred during the first quarter of this year. But as we have said before, it may serve a good purpose to periodically review some of the unfortunate, often tragic things that happen to some members of the boating fraternity.

As April came to an end, the number of boating accidents reported totaled 22; fatalities also numbered 22. The number of fatalities for 1965's first quarter is four above the total number for the first quarter of 1964. However, included in the 1965 total are three deaths associated with the loss of a government vessel and one aboard a tug. The point being that all of the accidents occurring during the first quarter of 1964 involved pleasure craft or small commercial fishing craft. It is misleading to combine small craft accidents with heavy government or commercial vessel accidents without making a distinction. Of course, the loss of a life is tragic regardless of the activity at the time, and too, there is often something to be learned from the facts surrounding any accident.

Three of the accidents occurred in January, four in February, seven in March, and eight in April. Here we can see the monthly increase as the boating season drew near. Last year there were no accidents reported in January and February but the reports of March and April brought the total up to 18 fatalities and 20 accidents for the 1964's first quarter.

Too often the cause of a boating accident is not known. This is especially true when there are no survivors. Investigators may find that the boat evidently capsized, but *why* it did so is the important question. This is the question in several of the accidents mentioned here, since capsizing is again a leading type of accident. Here are the various types of accidents revealed by the accident reports for the spring quarter of 1965: capsizing, seven (caused by various reasons such as use of unstable, homemade boat, standing in a small boat, rough water, etc.); fire or explosion, five (cause of this type is often hard to determine, but it is important to follow at all times the prescribed rules and standards concerning fire prevention aboard a craft); collision with another boat, one; overloading and subsequent sinking or capsizing, three; falling overboard, three; hitting underwater objects, two; sinking due to rough water hull damage, one; asphyxiation due to sleeping in closed cabin with stove on, one.

The boats involved varied considerably in size, but the old eleven footer was the boat involved in at least four deaths. The operators of all the boats, with the exception of two, were well out of the teenage category with the majority being over twenty-five years of age.

And there were injuries as well as fatalities. Most of these involved exposure and shock as the result of being dunked in cold water.

There is still a lot of boating ahead, and if all boaters would seriously review the tragedies mentioned above and consider with some very sober thinking those of the seasons past, the second, third, and fourth quarters of 1965 need not be so costly.

Being alert is certainly one of the most important defenses against boating accidents. Being careful, alert and cautious—all of these things are used by the boater with the accident-free record. He may not even realize that he is exercising such care, yet he must be for his record shows it. True, in a few cases he may be careless and lucky!

A National Safety Council Newsletter had something rather interesting to say about this business of being alert. The article suggested that we use our senses because our senses can help spot something wrong. The idea was elaborated upon in this way. Sight: be on the lookout for accidents in the making; hearing: listen for the off-beat sounds of defective or improperly adjusted equipment; smell: your nose can help you detect most gas or chemical leaks, overheated bearings, burning brakes, arcing electricity, etc.; touch: your hands can warn you of such things as excessive vibration or overheating. And for good measure, there's your common sense.

Speaking of common sense, it is just that which will keep your name off the citation list of boating law enforcement officials, namely wildlife protectors and Coast Guard Boarding Officers. Laws do not always spell out exactly how or where to maneuver your craft. Some things fall under the category of common sense safe boating practices. To remind boaters of this, the Coast Guard has announced that this season its boarding parties will place emphasis on unsafe practices such as excessive speeding, overloading, operating boats in swimming areas or posted areas, erratic operation, etc.

We mentioned earlier that the first quarter accidents involved more adults than teenagers. This is generally true throughout the boating year in North Carolina, and the Coast Guard has now backed this up with some of their national statistics. Their figures show that the typical accident victim is not the teenager, but the mature individual between the ages of 26 and 50. This does not mean, of course, that the teenager gets off scott free in this business of boating accidents. It does mean, however, that the older generation can stand to spend some time examining their own behavior on the water.

NORTH CAROLINA WILDLIFE

RESOURCE-O-GRAM

A ROUNDUP OF THE LATEST WILDLIFE NEWS

Hunting Regulations Established

At its June 16 meeting in Raleigh, the Wildlife Resources Commission adopted the hunting and trapping regulations for the 1965-66 season on nonmigratory game and fur-bearing species. Although most of the changes are minor, hunters are urged to check a copy of the new regulations when they are printed soon after August 1, 1965.

Fishery Surveys Underway

More than 25 impoundments and natural lakes are under study by the Commission's Division of Inland Fisheries this summer. Fish population inventories will update the information gathered in past years for the formulation of continuing management procedures. Data gathered thus far indicates satisfactory fish populations in most waters studied.

Water Tragedies

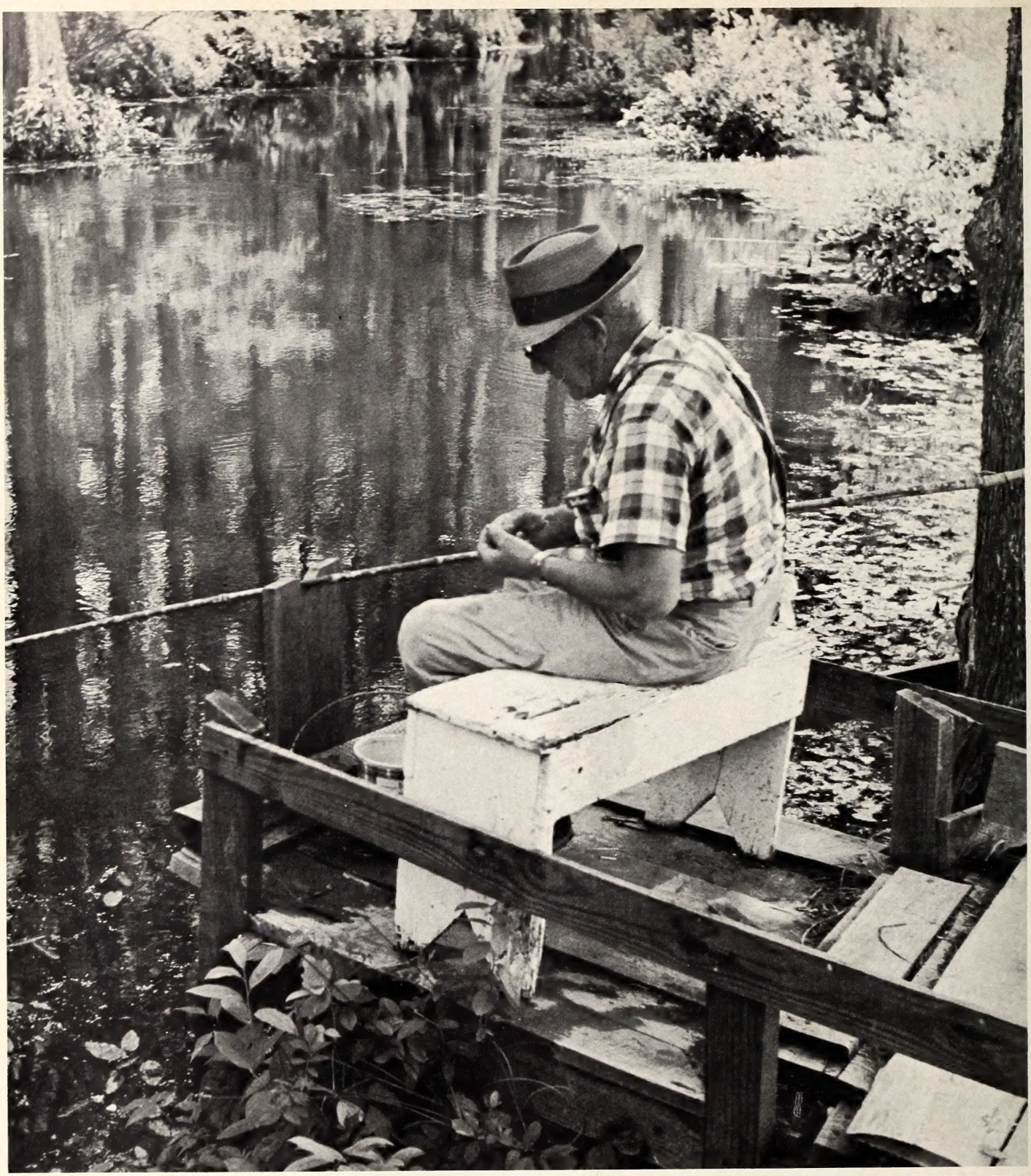
Small craft accidents are up over last year's count and at least 15 boaters have lost their lives in mishaps on North Carolina public waters so far. With National Safe Boating Week upon us (July 4-10), boaters are urged to make it more than "just another week", and really do something about boating accidents. It's up to you.

Combination License

If you have a combination hunting and fishing license, don't forget that these expire July 31, and that a new one is due if you plan to enjoy these sports after August 1. County and state resident fishing licenses do not expire until December 31.

Word on Dove, Marsh Hen Hunting

Word on the dates and bag limits for mourning doves and marsh hen shooting is expected from the U. S. Fish and Wildlife Service late this month or early in August. Waterfowl regulations will be forthcoming later. Plenty of doves and marsh hens are expected, but short supplies of ducks are feared.



F. EUGENE HESTER

Where the Cork Was

NORTH Carolinians can boast of some fancy fishing—from flashing rainbows in the Smokies to tail walking marlin off Cape Hatteras.

Regardless of the angler's choice of tackle or methods there's Tarheel fishing to satisfy his every whim. In many ways though, the philosophical old fisherman hit the nail on the head when he casually observed that "the prettiest sight in the world is the ripples on the water where the cork was." He was referring of course to the old method of bait fishing with a bobber to indicate a customer.

The word cork goes back to the days when pill dispensers used bottles with cork stoppers to package their pain relievers. Once the purchaser of pills had emptied his bottle and felt cured to the extent he didn't need a refill, he had an empty bottle which he usually threw away and a good cork for his tackle box.

To convert the cork to a fishing float it was necessary to either punch a hole in the center through which the line could be threaded and held in place with a wooden match stem, or to slice the cork half through, slide it on the line and close the cut with a small pin, rubber band or piece of thread. Corks so rigged have pushed the button on many finny bait stealers who soon thereafter flipped their last flop.

Corks and bottles have pretty much gone the way of the Model A Ford, the Charleston, depressions and other signs of an era. They left their imprint on the American fishing scene though, and created a demand which has since been adequately met by a wide variety of plastic, cork and wood fishing floats. When you hear a fisherman use the word "cork" nowadays you can be sure his fishing career dates back to the ancient days when game warden appointments were political plumbs.

The fishing float is a valuable item of tackle and properly used it can add lunkers to anyone's creel or stringer.

The most common mistake made in the choice of a float is to select one too large for the fishing requirement. A good gauge is to use the smallest size that will remain on the surface of the water and still suspend the baited hook at the desired depth. Even the resistance of this size bobber may warn a cautious or hook-stung fish as he makes off with the bait—a bait that looked suspiciously easy in the first place.

The modern day fishing float may be made of cork, plastic, wood or other material. By far the most popular material is plastic. It's durable, inexpensive, colorful and does not become water logged. It's also easy to rig for quick attachment to or removal from a line. Most cork floats have the old "hole in the center." Wood is not very popular except on inexpensive "hook, line and sinker" sets sold for use on cane poles.

Most floats or bobbers are spherical in shape although some are cone shaped, the intent being to offer less resistance as the fish pulls the float under the water. Some expert anglers recommend the use of porcupine quills because they offer little or no resistance but generally they are not popular.

Probably the heaviest users of floats are the casual anglers who fish lakes and ponds for pan fish such as bluegills and crappies. The idea is to locate the depth at which the fish are feeding and then move the float up or down the line so as to suspend the baited hook at the proper depth.

When using worms, crickets, etc., the smallest possible float should be used. If live minnows are the bait, the float should be large enough to prevent the minnow from submerging it.

Floats are also handy for bait fishing in waters filled with brush or weeds. If permitted to settle naturally, the worm or minnow becomes lost or entangled in the vegetation. A float can be adjusted to keep the bait above the weeds or brush and in view of the fish.

While most stream fishermen prefer to fish natural baits by permitting the current to roll the bait along the bottom, there are times when the bait is more effective suspended in the current. This method is sometimes very effective for river catfish.

Down on the coast of Texas live shrimp are a favorite bait for weakfish, commonly called trout. To attract the weaks a special popping bobber is used. It's a wooden float with a concave top. The float is set several feet above the baited hook and cast out into the flats. Periodically the line is jerked lightly and the float made to pop in the manner of a bass bug. The fish are attracted to the squirming shrimp by the noise.

Every live bait fisherman knows that to get the best results, his minnow or other form of bait must be lively. The bobber serves a purpose here as it indicates by its action whether the bait is moving. Once the float becomes motionless and remains so for any length of time, the minnow is no doubt dead and should be replaced.

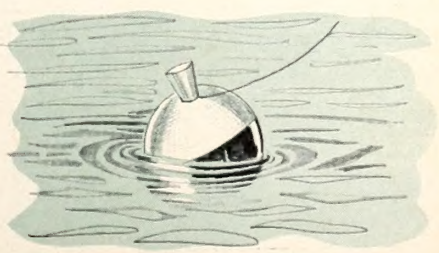
A special clear plastic float or "bubble" permits the already versatile spin fisherman to add dry flies to his wide choice of lures. The "bubble" adds the necessary casting weight and permits the fishermen to work dry flies on the surface.

Some fish are "nibblers" while others simply grab the bait and head off. It's the latter that creates the "pretty picture" as the float disappears into the depths.

The nibblers are usually small fish or bait stealers. They simply bounce the float around and arouse the angler's hopes. Occasionally however, a nibble can turn into a real bite as a curious fish nudging the bait suddenly realizes he has the real thing.

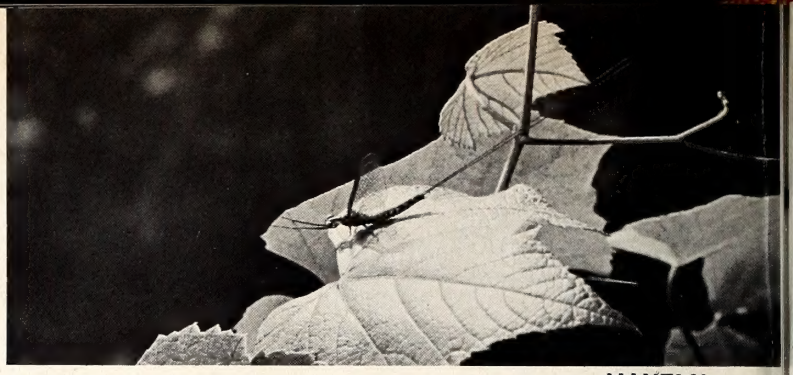
As the bobber disappears the angler has ample time to admire "the ripple where the cork was" as the fish usually grabs the bait lightly and heads for cover to munch and swallow it. If the eager fisherman strikes too quickly he's likely to jerk the bait away without hooking the fish. Some fish such as pickerel make an initial run, stop to swallow the minnow, and then head off again. During the temporary halt the bobber may bob to the surface. If this happens the angler should wait for the second run before striking.

If his timing is correct a solidly hooked fish breaking the surface will be equally as pretty a sight as "the ripples where the cork was." *By Bob Gooch*



Insects

Photo Feature by Joel Arrington



MAYFLY

INSECTS are by far the largest animal group on earth. Over 600,000 species have been identified. They have often been called man's worst enemy, and they are. If insects had the intelligence of mammals, they would dominate the world. But some have economic value, all of them are interesting, and many of them are objects of natural beauty.

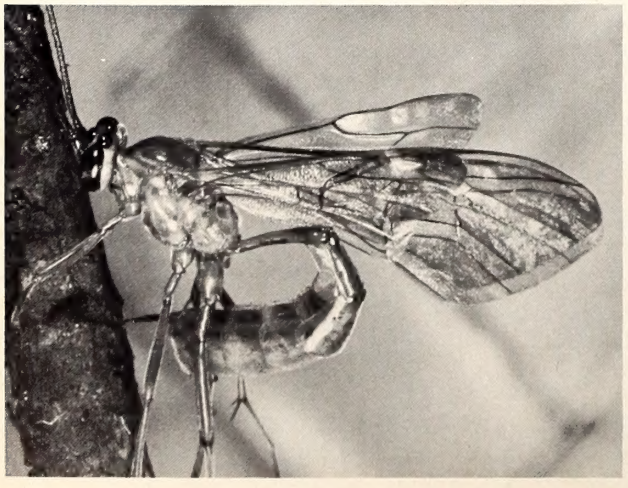
Just what is an insect? Insects are related to crabs and lobsters, and these animals belong to the phylum arthropoda, which means "jointed legged." Like crabs and lobsters, insects have a skeleton on the ***outside*** of their bodies, which is called an "exoskeleton." The body of an insect is composed of three divisions, the head, the thorax, and the abdomen. The thorax has three segments, each with a pair of jointed legs. Most insects have two pairs of jointed wings attached to the thorax, but some have only one, and some have none at all. But some insects are not typical. In these, the thorax and the abdomen may appear to run together, and immature stages may be wormlike.

Several insect-like animals are often confused with insects. Among these, spiders have only two body divisions but they have four pairs of legs and they have no antennae. Other insect-like animals have the head and thorax joined like the spiders. Crustaceans (crabs and lobsters) have at least five pairs of legs and two pairs of antennae. Centipedes and millipedes have many segments in their bodies with one or two pairs of legs on each.

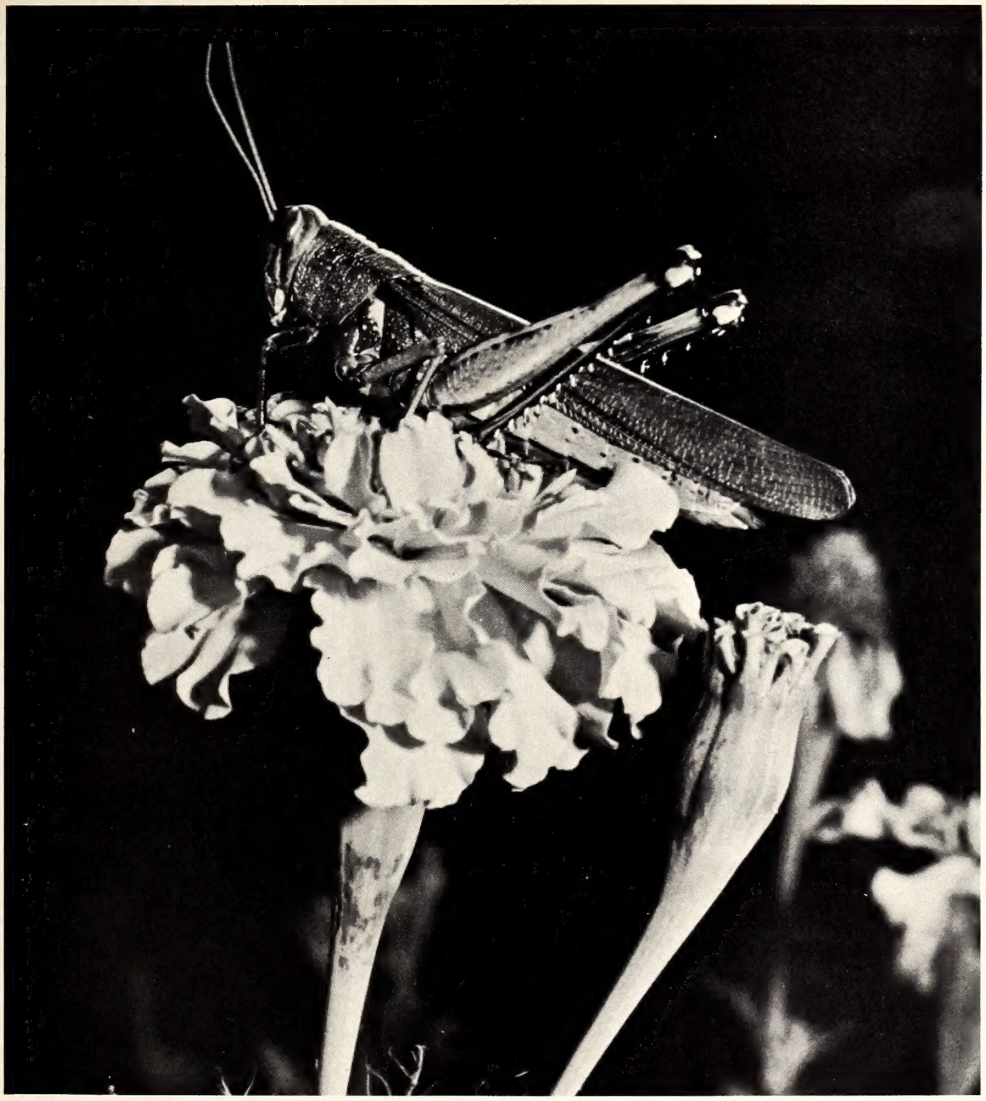
Only about one percent of all the insects are harmful, but these destroy about ten percent of our crops. Some insects are parasitic, and others carry diseases.

Without insects, this would be a very different world. We would have no apples, grapes, or clover, much less cotton, and fewer oranges and garden vegetables; for these, along with other plants, depend upon insects to pollinate their flowers. And there would be no honey, of course. Many birds, some fish, and a few mammals would go hungry. Some insects aid the process of decay. Some insects help control others, and all help maintain the balance of nature.

ICHNEUMONFLY



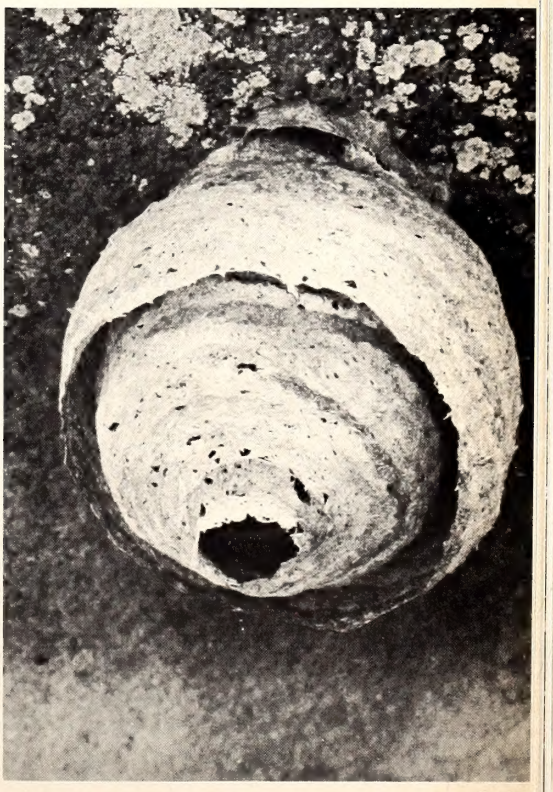
DRAGON FLY



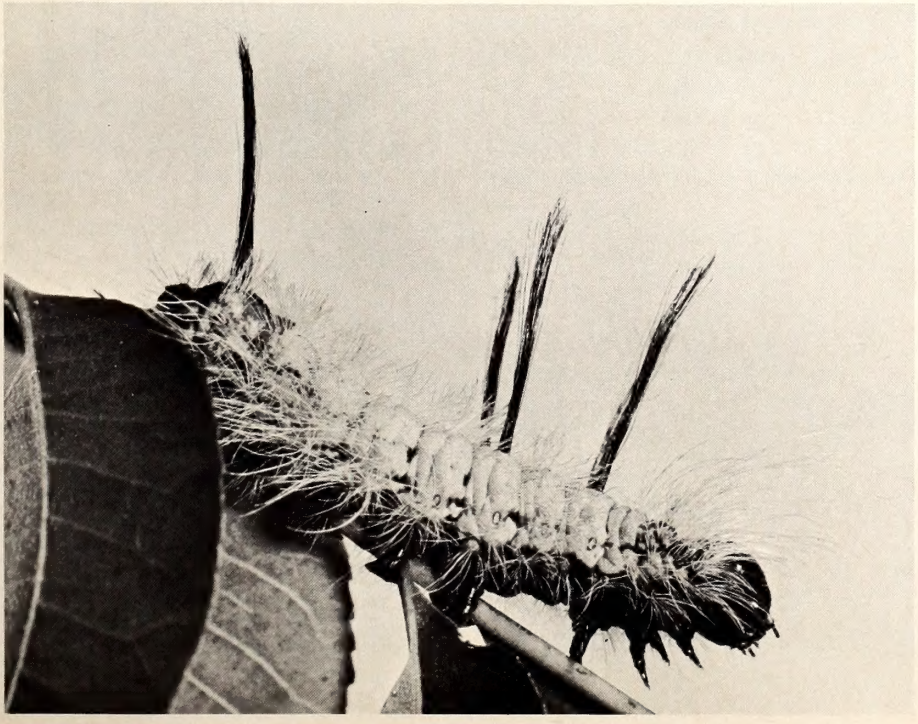
GRASSHOPPER

PRAYING MANTIS

BALD-FACED HORNET NEST

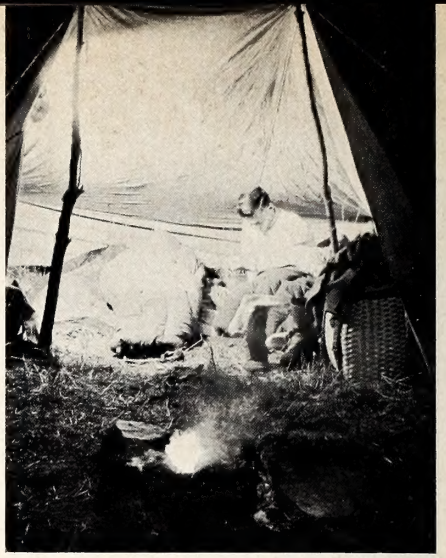


AMERICAN DAGGER MOTH CATTERPILLAR



Family Camping IN NORTH CAROLINA

by Bodie McDowell



IT'S quite apparent that North Carolina families are getting in step with the rest of the nation in the family camping boom.

It doesn't take a trip to camping areas along the beaches or the mountains to prove this point. A late Friday afternoon or Saturday evening ride or a visit to your local camping equipment dealer will prove the point just as easily.

All types of camping rigs can be seen along the main highways and the backgrounds as campers drive to and from their favorite camp sites. One sees soft top camping trailers, pickup-mounted campers, travel trailers and tents secured atop station wagons or being transported in the family boat.

And such rigs are getting to be more numerous every month. Camping 10 to 15 years ago was a thing for the man of the house and his fishing or hunting buddies. But not now. It's more likely to be a family affair with mom and the kids, and in some cases the family pet, getting in on the action. The case of dad going on a camping trip alone is just about a thing of the past except for a once-a-year trip to a wilderness area for deer, boar or bear hunting.

Campers in North Carolina are fortunate in that they can camp in the mountains during the heat of the summer or can get the jump on the camping season by heading for the beaches where camping weather usually prevails a little earlier than in the highlands.

Everywhere the story is about the same when it comes to camping during the peak of the summer vacation season. That is, a camping family must arrive early to be sure of getting a spot for the rig. Experts have in the past couple of years recommended that campers get to their sites by 4 p.m. This is rapidly changing. The camper who arrives around 4 or a bit later may find that he's out of luck, that all sites are filled.

Camp areas nearest the larger cities often are most overburdened as families try to get away from the hustle and bustle of city life without having to spend most of the day driving to a remote camp. Such facilities are within easy driving distances of most cities in North Carolina.

If the family living in the western section of the state desires a change in the scenery and camping conditions, he can take a couple extra days or his vacation time to head for the coast. By the same token, those living in the eastern part of the state can get the same change by heading westward to the mountains. The folks in the middle—in this case, those living in the piedmont—have it made. They can bundle the family in the car and head in either direction, and they have much less distance to cover.

That North Carolina is blessed with camping areas is noted in a 1965 campground guide which lists 79 different camping areas.

This is one way of doing it! A shelter cloth protects the dining table, small tents are pitched for sleeping. Plenty of salt air for these beach campers.

JACK DERMID

JOEL ARRINGTON

Although this is a group of hunters' vehicles near Uwharrie, it does show the wide variation in styles of camp trailers that will serve as road homes.

JIM LEE

Of these, 16 are privately operated, 20 are located in state parks and 43 in national forests or national parks.

A list of North Carolina campgrounds is available from the North Carolina Department of Conservation and Development, Raleigh.

Tarheel campers who will venture outside the state this summer or want to begin planning a long trip for some future time, should purchase one of the many campground guides available.

Ranking among the best are the "Guide to Campgrounds," by Rand McNalley, and "Camping Maps, USA," compiled by Glenn and Dale Rhodes. "Guides To Campgrounds" is available only through leading book stores and news stands and sells for $2.95, while "Camping Maps, USA," is available at $1.95 through mail from Post Office Box 862, Upper Montclair, New Jersey. There are many other such guides on the market, and each publisher updates his guide every year in order to keep up with the ever-increasing number of campgrounds in the country.

A word of caution is due those using campground guides for the first time. While the editors make every effort to compile correct information, they sometimes err. If one is making an extended trip, it's worth the time and expense of a letter or telephone call ahead to the camping area to make sure it is open, and to check on the facilities.

This is especially true if you're planning a trip north or "up East" early in the season or after September 1. The importance of this was brought home to me a couple of years ago when I pulled into a campground just off Highway 15 in Pennsylvania. A camp ground guide listed this ground as being open, but it was a new site and bad weather had delayed construction, so it wasn't open.

The result was a night in a motel, plus dinner and breakfast at a restaurant. And those who travel know what expenses like this can do for a budget. It was something like $16 for the motel, $13 for dinner for seven and $5 to $6 for breakfast for the same hungry campers. In addition, food for these meals already had been purchased. It wasn't wasted though as it was used later in the trip.

Since more and more families are camping each year, it is in order to pass on a few tips to the novice camper. The first tip is not to invest a lot of money in camping equipment until you decide whether or not you and your family will enjoy it.

It is better to spend a small amount to rent the equipment you'll need for that first trip than to spend a lot of money and then have equipment that you'll put back of the garage and not use again. Of if you have a friend who is a camper, he'll probably loan you his equipment in order for you and yours to try camping. But don't pick a weekend when he'll want to be using his gear.

Probably the next most important thing is not to plan a long trip for your first camping venture. Try a nearby camping area of some 25-50 miles distance. Or even your own backyard. Then, too, if the weather is threatening, postpone your trip. There's nothing that will kill the camping urge quicker in your family than to get soaking wet the first trip out.

Finally, but by no means least important, make a check list of everything you think will be needed. Check lists will vary from family to family, but it is important that you have everything needed to make the trip most enjoyable.

North Carolina has much to offer the camping family. In fact, you can plan your whole summer on camping within the borders of Tarheelia, and in so doing will see some of the prettiest country and camp sites in America. ◆

DEPARTMENT OF LETTERS TO THE EDITORS, FIELD NOTES, AND ITEMS OF INTEREST

Conducted By Rod Amundson

July brings us right into the middle of the good old summertime, the peak of the vacationing season, and the maximum exposure to outdoor hazards. These hazards range in degree of violence from a mild case of sunburn to a bolt of lightning while taking shelter under a tree during a thunderstorm.

Like most other accidents, vacationing accidents can be avoided through the exercise of common horse sense. Let's start with sunburn. A good scorching is a quick way to start a tan, but it is painful and interferes with a great deal of vacation pleasure. Take the sun, but do it by degrees.

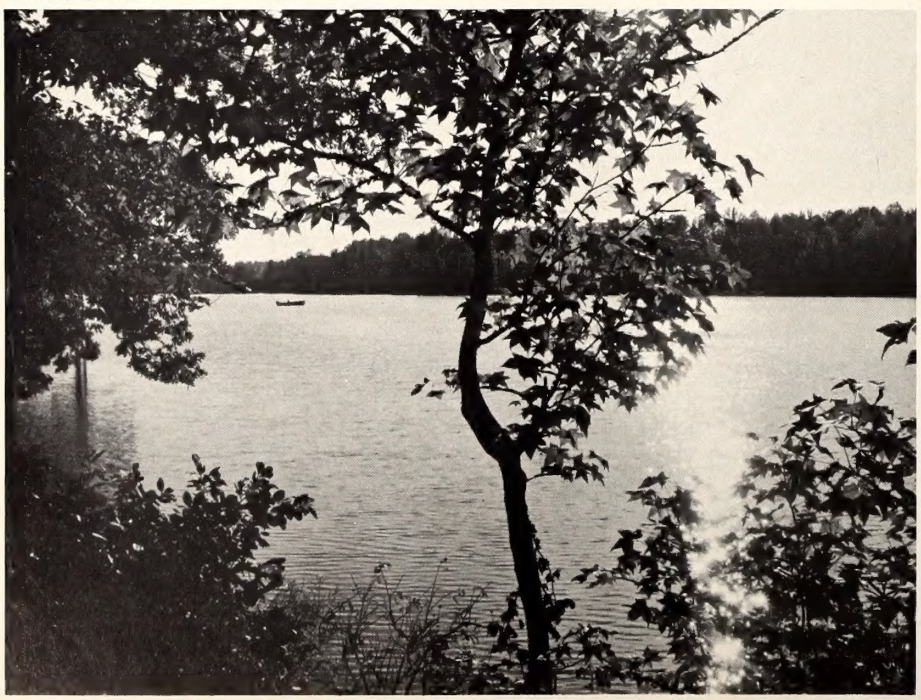
There are always mosquitoes around most vacation spots, but aerosol spray insect repellents will rid you of most of these. If you don't know what poison ivy looks like, you are either free from this type of allergy or lucky. Learn the plant, and avoid it.

More people are killed going to or from their vacation spot than are ever killed on the spot. Watch your driving—and the other fellow's driving, too. The same goes for boating. Know your boat, your water, the rules of safe boating, and so on. Leaving your lifesaving or other safety equipment ashore is like leaving half of your brain there.

Here is a vacation hazard that seldom gets mentioned. Unless you are properly licensed to fish or operate a boat, you stand a good chance of spending good time and good money in court. This can put a wet blanket on the best planned vacation. The same goes for observing the rules regarding fishing, operating a boat, or driving.

This potential vacation spot is Chub Lake in the northern part of Person County. Wherever you go this summer, be careful.

THOMAS E. BAKER



Point of View

DEAR SIRS: Several times in the past I have written letters to our Congressman, Mr. Roy A. Taylor, asking him to do all he can to have a law passed prohibiting the killing of doves.

He has written me that the Migratory Bird Act of 1918 provides as much protection for doves as any other migratory (game) birds—that the birds can be killed only in open season and this time is set within a framework prescribed by the Secretary of Interior.

The State, if it desired, could prohibit the killing of doves in its borders entirely.

This is what I wish to ask of you and ask it with all my heart and mind. Why should hunters be allowed at *all* to kill these lovely birds? Surely they are are song birds for no one can deny the beauty of their soft cooing. Sure, they *are* a challenge to hunters because of their swift flight . . . but does this balance the danger of lessening their numbers to such a degree that in time they too may be extinct . . . as our Carolina parakeets and passenger pigeons are now?

Must men always seek pleasure and 'wholesome recreation' by carrying guns and teaching their sons to do the same, through our woods and forests, and indeed, right on one's own town-property, within the city limits as is done on our own land here in Tryon, to kill whatever walks, flies or crawls within his gun's range?

When I read my copies of Defenders of Wildlife News magazine, I am so filled with pity for our helpless animals that are being destroyed by the uncaring and reckless killing all over the world I can hardly credit the fact that our civilization has reached such senselessness. When I read of our golden eagles and bald eagles being shot they are so few in number already, and the killing of wolves, coyotes, kit foxes, bears and other animals and birds too numerous to mention; when they are so nearly wiped out already, I am outraged and moved to add my voice to all other men and women who deplore this, and ask for your help in trying to stop, and as soon as possible, this loss of our wildlife, through hunting, pesticides and other means of destruction.

Please try to do all you can to change this situation! *Will* you?

MRS. W. M. MEBANE, SR., TRYON

Years of research have shown that about 75 per cent of each year's dove crop can be harvest-

ed by hunters without endangering the breeding population. In states where no dove hunting is permitted it has been learned that natural mortality, lost to disease, predators, and other decimating factors, destroy about 75 per cent of the populations. Thus hunting puts to human consumption birds that would otherwise die and be wasted.

Despite heavy gunning for many years, doves are still among our most abundant game species. There will be as many birds singing and nesting next spring as there were last spring, giving enjoyment to both bird lovers and sportsmen.

We deeply respect the wish to see doves put on the protected birdlist, but I am sure that doing so would incur the wrath of several thousands of highly volatile hunters. Ed.

Spring Beauty

DEAR SIRS: I wish to thank you for your prompt and efficient work in filling my request for information on bird conservation. The material is excellent and I appreciate your sending copies for all in my garden club.

I have another request, this time concerning wildflowers in North Carolina. I would like to see someone in our state publish a lovely book of color photographs of flowers growing in their natural habitat with a botanist's brief description, necessary scientific information, and interesting information. There should be also a note of "do not pick" for those on our conservation list, or "pick only under certain conditions," for others.

I do not know whom to write showing my interest and the interest of others here. I have the book "Flowers of the South," by Greene and Bloomquist, and have noticed that he did lecture on "Wild Flowers of North Carolina."

Our state has a marvelous variety of wild flowers and we should preserve them. Color photographs show their beauty and charm and might attract the attention of those people who do not know them and therefore cannot appreciate them.

I would appreciate your passing this note to someone who might be interested in such a book or let me know whom to write. MRS. F. W. WILCOX, WINSTON-SALEM

We agree that North Carolina needs a good, well-illustrated book on native wild flowers. South Carolina has an excellent publication on the subject with color reproductions of wild flowers indigenous to this general region. It is printed by the University of South Carolina Press and is available for about $5.00. Perhaps an enterprising publisher in our own state can do something similar.

As much as all North Carolina wildlifers are interested in wild flowers, they do not, *per se*, come within the legal or fiscal field of wildlife conservation.

Last spring, students of Miss Helen Myers' fourth grade at Gamewell School, Caldwell County, constructed bird houses as part of a conservation study program. Judges were Tom Parks and Fred May of the Lenoir Audubon Club. Here are the winners: front row, left to right, David Summerow, Donald Bentley, Kenneth Crisp, Terry Waters; back row, left to right, Sherry Moore, Cathy Ponds, Sheila Pennington. Sherry Moore won first place for the girls while Donald Bentley was the boys winner. In the bird feeder group, David Summerow took first place.

High Point Man

DEAR SIRS: I was reading in an earlier issue of "Wildlife" about the biggest buck killed in North Carolina. I don't remember exactly what it was but I believe that I can top it. My father knows a man in Pamlico who killed a 27 point buck.

ROYCE MORTON, POLLOCKSVILLE

Most deer hunters are interested in pounds as well as points. The proper combination should add up to a trophy, if not a record.—Ed.

Help On the Way

DEAR SIRS: I am 14 years old and a freshman at West Rowan High School in Rowan County. I am very interested in wildlife of all kinds, and especially quail. My father and I have a dog and hunt every chance we get; but for the last two years we have been observing fewer birds around our home.

Any information you can give me on the food and shelter plants I should plant for quail would be welcomed.

We take the*Wildlife* Magazine and enjoy it very much.

GARY McDANIEL, WOODLIEF

We would suggest such Wildlife Commission publications as "Planning for Wildlife on the Farm" that tell how to improve farm game habitat. Thousands of North Carolina farmers have

KNOW YOUR PROTECTOR

James Hal Duke, Jr.

Wildlife Protector James Hal Duke, Jr., son of Mrs. James Hal Duke of Kittrell, was born in Warren County, but moved to Vance County at an early age. Prior to his employment, Hal spent two years with the U. S. Army at various stations in the United States. He was engaged in a grocery business in Henderson also.

Duke attended the Wildlife Protectors' Pre-service Training School at the Institute of Government at Chapel Hill in January, 1962 and went to work as a wildlife protector stationed at Louisburg, North Carolina in February of that year. During this time of employment, Hal won the respect and admiration of all of the sportsmen of Franklin County for his fair and impartial enforcement of the game, fish and boat laws and his sincere interest in conservation of the natural resources of that area.

He is married to the former Carolyn Wells of Henderson, and they have two children, Dick and Scarlet. They now are making their home in Louisburg. ⬍⬍

DIVISION ENFORCEMENT RECORD FOR DECEMBER, 1964

HUNTING & FISHING

Persons checked	31,452
Total prosecutions	926
Total convictions	899
Total cases not guilty	11
Total cases nol prossed	10
Total cases dismissed	6
Total Fines collected	$9,112.90
Total Costs collected	$6,963.28

BOATING

Boats checked	149
Total prosecutions	20
Total convictions	20
Total cases not guilty	0
Total cases nol prossed	0
Total cases dismissed	0
Total Fines collected	$30.00
Total Costs collected	$124.70

All fines and any arrest or witness fees are paid into the school funds of the counties in which the violations occurred, and no part of the fines or costs collected are paid to the North Carolina Wildlife Resources Commission or its personnel.

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helped to improve small game hunting by using these bulletins as a guide.—Ed.

Big Bass

DEAR Sirs: On Sunday, March 7, I caught a bass out of the Catawba River that weighed 8¾ pounds. It was 24¾ inches long and the girth was 19 inches. I was curious as to the age of this fish and was told that if I sent you folks a couple of scales that you could tell the age.

I enjoy your magazine very much, and hope that your continued stress on water pollution will not go unheard. I'm sure not many fish will be caught as large as this one if something isn't done soon to put an end to the "dirty water" problem. BLAKE H. STEPHENS, JR. CHARLOTTE

A scale examination showed the fish to be eight years old. —Ed.

By Leaps and Bounds

DEAR SIRS: Please send me any information you may have on how to set up and maintain a frog farm. I have a two acre pond of what seems to be ideal for frogs.

I have not been able to secure information on frogs and would appreciate your help. TED M. WILLIAMS, GREENVILLE

We have no information on the subject. Try the U. S. Department of Agriculture or the Superintendent of Documents, Washington, D. C.

Mixed Sports

DEAR SIRS: In looking through an article in the February issue of **Wildlife** entitled "The JC Ranch for Duck and Geese," Author George Burdick made reference to a 1956 UNC Basketball National Champion. If he will inquire with any Tar Heel fan I'm sure he will be aware of a mistake he has made. The Tar Heels won the championship in 1957. Keep up the good work. OSMOND SMITH, SEMORE

No-Strike Agreement

DEAR SIRS: I would like to know how to catch bass that will not hit. At a nearby pond there are bass in it weighing up to six pounds, and can be seen from the bank easily. I've tried almost everything in the book; but they either ignore it or follow it.

Once I was using a broken-back minnow plug, and as I was bringing it in there were about three or four big bass following it and striking it with their noses. Any suggestions would be acceptable. Also I enjoy your great wildlife articles and magazine. DON SHOAF, WINSTON-SALEM

The only way to catch bass that will not hit is to set your hook firmly just before they bite. You have asked a question for which quite a few millions of bass fishermen await an answer. If there is an answer, and we hear of it, it will be published in *Wildlife*.—Ed.

What Knot to Do

DEAR SIRS: Several times recently I have been fishing with minnows, and had my new 6 pound test monofilament broken easily by large bass. I'm sure the line was not weakened and was not broken off on underwater obstacles. Under normal conditions how large would a bass have to be to do this? I enjoy your magazine very much, and look forward to its coming each month. JAY MULLINS, CARY

It may be the knot you are using; some will decrease a line's strength by almost half. Even a four-pounder could break a six-pound test line with a sudden lunge, but expert anglers have "landed" a 185-pound swimmer with six-pound test line.—Ed.

One Way

DEAR SIRS: Please extend to Mr. Thad Cherry my compliments on his needed and well written article in your May issue.

Animal owners in North Carolina should be made to realize that their dogs and cats, when allowed to run loose, constitute a dangerous threat to our wildlife.

After having seen several examples of what Mr. Cherry described I have started shooting dogs and especially cats which I know to be running wild. This may offend the sensitivities of some, but this is the only cure for a problem which can be best handled in a preventive manner. THOMAS M. PARKER, WILLIAMSTON

On the Way

DEAR SIRS: I've been an avid fan of your magazine for some ten years now, and have been putting off this letter year after year.

I've watched with pride as a North Carolinian the growth and expansion of your publication and long ago stopped wondering how and when it would become even bigger and better. I just wait for the next issue.

Recent articles on fishing lead me to this suggestion. Why don't you take the information gleaned from recent Wildlife Commission surveys of the state's river basins and do a series of articles on fishing hot spots around the state? It would be an invaluable guide to fishermen. KEITH R. HUNDLEY, WPTF RALEIGH

Fisheries expert Darrell Louder has promised to do a series, and thanks for the suggestion. We can point out the hot spots, but we can't turn on the heat to *make* the fish bite!—Ed.

Pond Problem

DEAR SIRS: After reading "Crackshots and Backlashes," I've come to the conclusion that you might be able to help me.

My father-in-law had a pond built last year and this year he's having quite a problem with "moss." He fertilized the pond a week ago and it seemed to make the moss much worse. Is there anything he can put on it to get rid of the moss without harming the fish? GUY W. PRITCHARD, SILER CITY.

We can only guess, but the moss (probably filamentous algae) is probably the result of too much fertilizer. Hold the fertilizer until next spring, then fertilize lightly. Copper sulfate at the rate of 1½ pounds per acre-foot of water may help control this unwanted algae.—Ed.

LUTHER PARTIN

Wildlife Protector E. R. Jarrett of Haw River, right, is shown receiving the Service to Safety Award presented annually by the Rural Safety Council to an individual for outstanding service in the field of rural safety.

Presenting the award is the awards committee chairman, Dr. Eloise Cofer, Assistant Director, Agricultural Extension, N. C. State University. In the center is Wildlife Protection Supervisor Tom Rollins of Sanford.

This is the second consecutive year a wildlife protector has won the Safety Council's individual award. Jarrett was cited for his "outstanding service above and beyond the call of duty in teaching and demonstrating safe gun handling, firearms instruction and hunter safety courses." His educational activities reached approximately 2,000 people directly in the Piedmont area, and many others indirectly through the newspapers, radio and television.

Jarrett was also recently awarded the coveted Instructors' Training Award Certificate presented by the National Rifle Association to volunteer instructors with outstanding records in the NRA Marksmanship program.

Mass. Migration

DEAR SIRS: Some unknown friend sent me a subscription of your wonderful magazine, and I have been unable to find out who. Would appreciate this information if available. Also I would appreciate the date of expiration so I can renew the subscription.

Am enclosing $2.00, please send me one film strip of North Carolina birds as advertised in your February issue of "Wildlife in North Carolina," for use with the Audubon Club of Massachusetts. I am a former Tarheel and enjoy your Magazine very much, although all my hunting has been done with a camera. I maintain a feeding station for birds, and have spent many hours pleasantly watching the different birds at close range.

You may be interested to know that I have 25 Mourning Doves using my station, who have stayed all winter, although they are supposed to be South at this time of year; also they are very tame. ELBERT LEARY, SAUGUS, MASS.

ADDRESS CHANGE NOTIFICATION

Name_____

Old Address_____

_____

New Address_____

_____

Zip Code_____

IMPORTANT:

Enclose present Address Label

Please notify us promptly of change of address.

Use this blank to subscribe NOW—$.50 a year
$1.00 for two years. No stamps, please

WILDLIFE IN NORTH CAROLINA **New** ☐
P. O. Box 2919, Raleigh, N. C. 27602 **Renewal** ☐

I enclose $_____; send me WILDLIFE IN NORTH CAROLINA for_____years starting with the earliest possible issue.

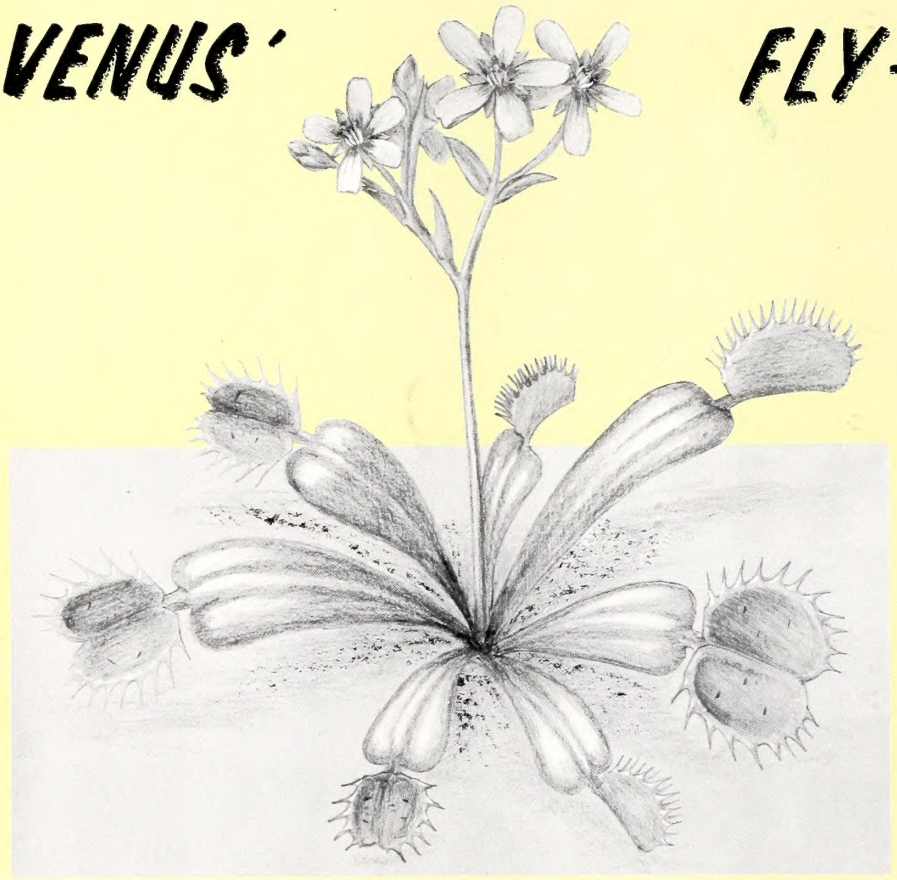
Name_____

Street or Route_____

City_____ State_____ Zip Code_____

Please notify us promptly of change in address
If renewal, please send in address label.

VENUS' FLY-TRAP

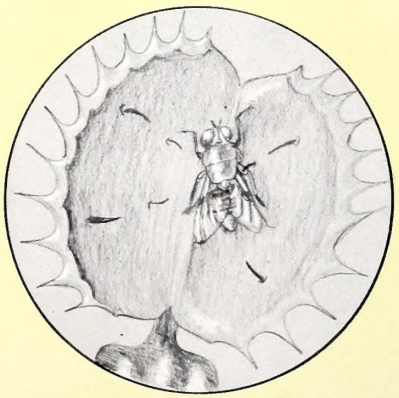


The Venus' Fly-Trap, one of the world's few insect-eating plants, is found only in North Carolina.

Living in the poor soils of bogs, it supplements its diet with live food from which it obtains the minerals lacking in the soil. To catch this live food it has developed one of the most extraordinary devices in all of nature's realm.

The trap, shown open below, has four tiny hairs in each half. These hairs are the "triggers."

When an insect, such as a fly, touches one of the hairs, the trap is triggered and . . .



closes on the insect. Within a week it will have digested the insect and will reopen for its next meal.

LITHO BY THE GRAPHIC PRESS, INC., RALEIGH, N. C.

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North Carolina State Library
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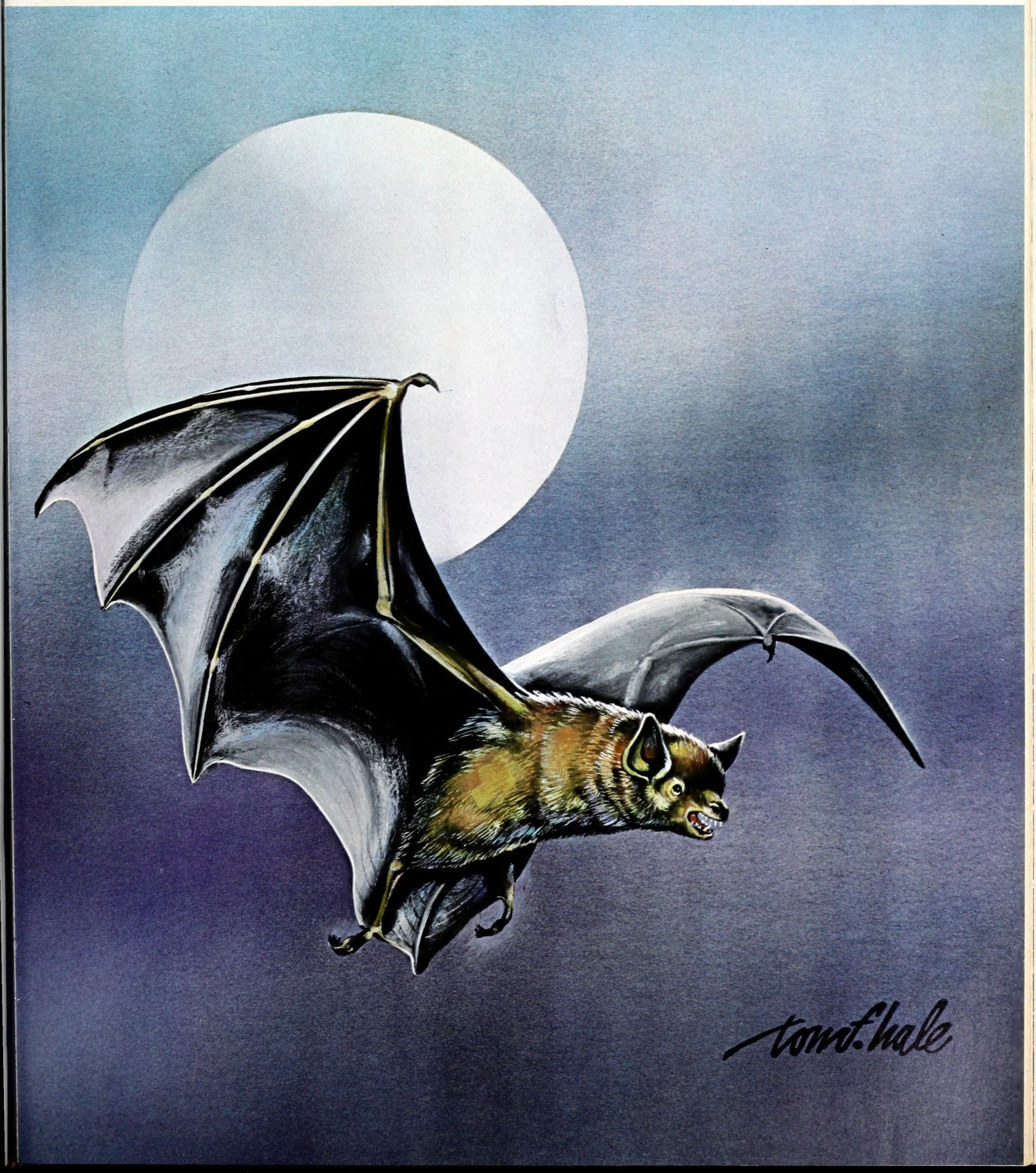
Wildlife IN NORTH CAROLINA

AUGUST, 1965



JOEL ARRINGTON

WEB OF LIFE

All living things have many activities which they share in common. Among these tasks is the gathering of food. Some animals spend most of their waking hours in the pursuit of food simply to stay alive. This orange garden spider constructs a trap and waits for nourishment to come to him as flying and hopping insects.

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WILDLIFE IN NORTH CAROLINA recognizes the need for close cooperation between State and Federal conservation agencies and the people who hunt and fish—to bring about a restoration of our renewable resources. The Editor gratefully receives for publication news items, articles, and photographs dealing with the North Carolina out-of-doors, but reserves the right to reject materials submitted. Full credit is given for all materials published.

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Wildlife IN NORTH CAROLINA

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One of the first recollections of bats that many of us have is that "they will get in your hair." Along with the warts from toads, this is just another untrue tale of misunderstood creatures. The bat is a flying mammal with what is thought to be a super-sensitive radar-like system for detecting flying insects. Most of our native bats feed at night on various insects, and are considered quite beneficial. They may be carriers of rabies in rare instances. This midsummer night scene was painted by Tom Hale.

Recent legislation by the North Carolina General Assembly provides protection for our largest reptile.

The ALLIGATOR

North Carolina's Link With The Past

Darrell E. Louder

NORTH Carolina is one of nine states fortunate enough to have the American alligator in its fauna; however, most people associate the alligator with the tropical sections of the United States—Florida and Louisiana. Actually the American alligator inhabits parts of Texas, Arkansas, Mississippi, Alabama, Georgia, South Carolina, and North Carolina, and all of Florida and Louisiana.

As a Tarheel resident, the alligator is found in the swampy areas near the coast. If you would draw an imaginary line through Laurinburg, Fayetteville, Goldsboro, Greenville, Plymouth, and Kitty Hawk you would have, southeast of the line, the natural range of the gator in North Carolina. There are, however, a few isolated alligators located north and west of this line. These animals were probably released into the area by tired owners of pet alligators and have successfully survived out of their natural range.

The American alligator is a descendent from the "Age of Reptiles" which dates back approximately 365 million years. During this Upper Devonian period a myriad of bizarre creatures emerged. These animals ranged in size from the small Cotylosaurus to the large Brontosaurus. One of these creatures, Phobosuchus, resembled the crocodile of today. This animal, when full grown, had a head which measured six feet and a total body length of 45 feet. During the Mesozoic period, the Phobosuchus crawled about the swamps, under the giants of that period, and prayed upon young dinosaurs which wandered too near its habitat.

The "Age of Reptiles" lasted for about 200 million years before its doomsday. However, a few direct descendents from the era did survive. One such family of animals was the Crocodylidae of which there are presently twenty-three living forms. One member of this family is the American alligator.

The American alligator has a relatively thick body and its coloration is black with some hint of yellow markings. It has a muscular tail which, when full grown, can break a man's leg. Its jaws, fitted with 80 teeth, 40 on the upper and 40 on the lower, are extremely powerful. An adult alligator's jaws have a crushing power of 1,000 pounds, yet its mouth can be held shut with three revolutions of electrician's tape.

Many people have a dfficult time distinguishing the American alligator from the crocodile. The distinction is not great: the crocodile's upper and lower teeth are more or less in a straight line and the large fourth tooth fits into a notch in the side of the upper jaw. The fourth tooth is visible when the crocodile's mouth is shut, thus producing a constriction of the snout at this point. The alligator's upper teeth, on the other hand, are placed outside the lower teeth, making the fourth lower tooth fit into a pit in the upper jaw when the mouth is closed. This tooth can not be seen when the alligator's jaws are shut.

The gator's life span can be a long one and it is not uncommon for one to live in excess of 50 years. The average size of the

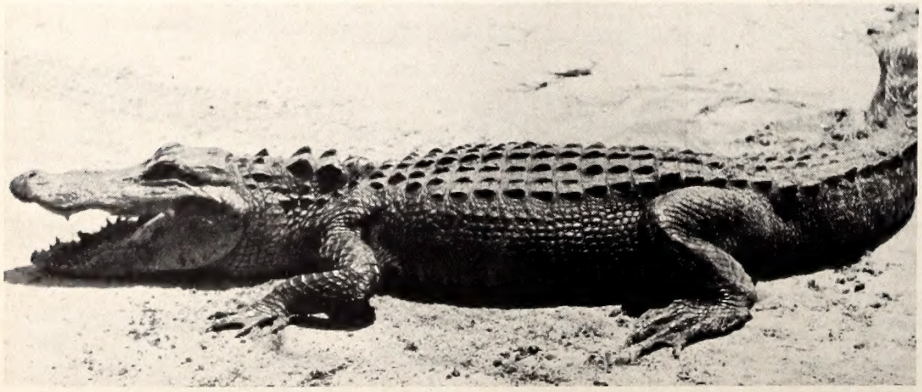


PHOTO BY THE AUTHOR

The American alligator, a resident Tarheel, boasts an ancient ancestry.

American alligator is 8 to 10 feet with a record known size of 19 feet, 2 inches. This large male alligator was killed off Avery Island, Louisiana. North Carolina's largest living specimen is a 13 foot giant which lives in the swamps of Carteret County.

Because the alligator is hunted unmercifully for fun or for its hide, there are few of the gigantic specimens of former times left.

The American alligator is extremely shy and retires to the wild. Because of this shyness and its remote area habitat, movies, magazine articles, wrestling exhibitions, and word-of-mouth exaggerations have made the creature a ferocious and evil beast. What better way is there to dispose of some villian than to have him chased into some remote swamp where he becomes lost, and is devoured by alligators; or to test the hero's courage by having him do battle with the armored monster? This would fall flat in real life without the unrealistic editing and fixed situation. In reality, the American alligator would sink immediately from the scene leaving only a few bubbles remaining.

There are no recorded human deaths from alligators. There are, however, a few injuries, these coming as a result of handling the animals. Most recorded attacks from alligators resulted from the individual and the alligator making a mad dash to safety in the same direction. By the time the story is told and re-told, the alligator attacked savagely, rather than being frightened away as it actually was.

Having had personal experiences with numerous alligators over the past eight years, I have found that the character of this animal is far milder than generally pictured. I have found that continued probing is required to arouse the beast. Once aroused, the alligator has the ability to handle himself effectively, however.

Young alligators are brought into the world in a very simple, but extremely interesting way. During early spring the male, or bull alligator, stakes out his territory and begins to bellow. This bellow is an awesome B-flat roar which can be heard for a great distance and is the mating call. In some ways the roar resembles that of a giant bullfrog, and for a long time I assumed this bellow was that of an extra loud bullfrog; but from later experiences found it to be bull alligators. Once the female is attracted to the male, mating occurs. The male then goes back to his bachelor habits leaving the female to build the nest and care for the eggs.

After the male departs, the female alligator begins nest construction by scooping up mud and aquatic vegetation in her jaws and stacking it neatly into a large pile. When completed, the nest ranges in diameter from 5 to 8 feet and is 2 to 3 feet in height. The eggs, 20 to 80, are then deposited in the center of the nest and the nest covered over with mud and aquatic vegetation. The eggs are about the size of goose eggs and the shells are hard.

The female shapes the egg-filled nest by crawling over it to give it a smooth appearance. After this is completed she takes up vigilance near the nest until the eggs hatch. During dry periods, the female alligator carries water in her mouth to the nest to keep it moist. During the incubation period the female alligator is short tempered and defends her nest from snakes, raccoons, bears, and even man. Incubation time for the eggs is usually between 8 and 10 weeks. During the incubation time the eggs remain warm as a result of the decomposition of aquatic vegetation.

When she hears the first grunt from a hatching alligator, the female rushes to the nest and tears it apart with her front feet and powerful jaws to release the newly hatched young. The newborn alligators are about 8 to 9 inches in length and resemble the adult. Once the baby alligators are released from the nest, they head for the nearest water. If the hatch is late in the summer the young alligators sometimes remain in the den with their mother during the first winter.

PHOTO BY JOHN PARKER

The author is shown collecting a two-year old alligator for measurements to determine growth rates.

PHOTO BY JOEL ARRINGTON

Young American alligators are about 8 to 9 inches long when hatched.

The lives of young alligators are always in jeopardy. From the air they are sought by hawks and owls looking for an easy meal; on the ground, snakes and raccoons menace them; in the water, largemouth bass, turtles, and even bullfrogs feed upon them. There are also the big bull alligators which like to have a variety of food in their diet and will consume their own young or those of some other alligator.

Young American alligators grow very rapidly during the first few years of their lives. Their average rate of growth during this period is from 12 to 18 inches per year, depending upon their food supply. Once they reach six feet, their growth rate decreases. North Carolina alligators mature when they reach 5 to 7 feet. Female alligators seldom exceed 9 feet and weigh around 160 pounds; bull alligators commonly reach 12 feet and weigh in excess of 500 pounds. Most alligators are peaceful, but the large bulls do get cantankerous and drive the young breeding alligators from their territory. When they are real large, they are bad for their own species, because they kill the young alligators and lose their fear of man.

When an alligator population in a locality is dense, I have found that up to sixty percent of the alligators have lost parts of toes, legs, and tails. This loss is usually a result of an alligator fight. In areas where there are few alligators, only about one-tenth of one percent have a missing appendage.

Young alligators feed principally on insects, crustaceans, and small fishes. As the alligators grow larger, their diet changes to fish, turtles, and snakes. When they become six feet long and over, they feed mainly on muskrats, swamp rabbits, waterfowl, fish, and turtles. Extremely large alligators can seize a deer, hog, or even a cow, when it comes to the water to drink, and pull it under until it drowns. Once the animal is killed the alligator tears off segments by rotating its body rapidly and literally twisting off section after section until there is very little remaining intact. If the alligator can not swallow what he has killed, he stores it in some secluded spot until it rots and then returns to consume it at his leisure.

In the North Carolina coastal swamp-land, pigs are occasionally lost to alligators. In most cases the farmer has built his hog lot down to the water's edge, thus making the hogs an easy meal for a passing alligator.

You may wonder how alligators fit into Nature's scheme. In my opinion they are necessary predators. Their fondness for the slow moving rough fishes, such as the longnose gar, bowfin, and eastern lake chubsucker helps control them and may increase the game-fish populations. When the turtle population becomes too abundant alligators feed heavily upon them, crushing their shells with powerful jaws. These are swallowed whole and the strong digestive juices of the stomach dissolve the shells. Their diet also consists of snakes, and they are especially fond of cottonmouths. This helps reduce the number of poisonous snakes and keeps them under control.

Alligators dig deep wallows in the swamps near their dens. These wallows play the part of another "Noahs Ark", during periods of drought. During periods of little rainfall, the swamps dry up with a great many fish managing to get to the alligator wallow. Here the fish survive to again return and to repopulate the swamp once the rains come and the swamp fills. If it were not for these alligator wallows, the swamps, which normally produce good fishing, would be void of most fish life. Also, during periods of drought, the deer, raccoons, opposums, bears, and the birds visit the water holes. Without this water the mammals and birds would have to leave or perish.

In areas where alligators are present, largemouth bass fishing is usually excellent. If the alligators are removed, the bass fishing usually declines.

Many states, having alligators in their fauna, have laws which protect them, because they realize that alligators play a beneficial role as predators and have economic and esthetic values. American alligators and their ancestors have been able to survive an ever-changing world for over 365 million years, but they are now on a steady decline. This decline is a result of the encroachment of cities, roads, drainage projects, and man in general. Just recently the United States government placed the alligator on the list of animals which are now in danger of becoming extinct.

Unless we want the American alligator to vanish, as did the passenger pigeon and bison, we need to give him a helping hand and try to understand him the way he really is. Unless this is done, the American alligator may not be around for our children and grandchildren to see, appreciate, and enjoy. ▲▼

PHOTO BY JACK DERMID

WATER POLLUTION

By Louis S. Clapper
Chief, Conservation Education Division
National Wildlife Federation

North Carolina has made progress in controlling pollution, but nationwide the situation is in an alarming state.

A CROW drifts slowly down the Missouri River riding a raft of solidified grease and animal tissue held together by a binder of hog hair. Only a carrion bird could stand the smell, yet many downstream cities take their drinking water from this river.

Live viruses, dumped into our coastal waters from sewers and dirty bilge tanks, have caused hepatitis in persons who ate clams harvested from sewage-laden waters on the Atlantic Coast, and oysters from the polluted Gulf.

Nitrochlorbenzene, an extremely poisonous organic chemical, is detected in the Mississippi at New Orleans—and followed a thousand miles upstream past many city water intakes to an industrial waste discharge in St. Louis. No one can yet guess the damage this might do to man and wildlife.

This is only a sampling of what is happening in many parts of this country. The detailed story is much longer, equally appalling, and adds up to America's shame—the pollution of our waters.

Water pollution in the United States is a menace to our health and an economic burden which is robbing us of water we need," asserts G. E. McCallum, Chief of Water Supply and Pollution Control in the U. S. Public Health Service. "It is a destroyer of fish and wildlife habitat, a threat to outdoor recreation, and in many communities, an aesthetic horror."

Words, at least words that can be used in mixed company, cannot describe the filth we pour into many of our streams, lakes and oceans. Sewage, slaughterhouse offal, thousands of lethal chemicals, radioactive matter—these and other of man's wastes combine to form what sanitary engineers, for lack of a better term, call "gunk". Gunk defies analysis and perplexes health authorities who are desperately trying to keep up with its harmful effects on man and other living creatures.

We are faced with some inescapably gruesome facts:

■ Sewage treatment plants are, at best, only 90 percent efficient with organic material—and some inorganic wastes defy treatment.

■ The Public Health Service has isolated polio, infectious hepatitis and more than 30 other live viruses which may carry disease from treated sewage effluent.

■ Because we increasingly reuse water, chances are four out of ten that the water you drink has passed through someone's household plumbing or an industrial plant sewer.

Then what prevents us all from being sick?

"The fact our water treatment plants are the best in the world," answers McCallum. So we have some of the worst pollution, but the safest drinking water — thanks to its being disinfected by chlorine and other chemicals which kill most bacteria even though the water sometimes has a disagreeable taste and odor. But we are riding a thin edge.

The effects of water pollution are much broader than health. Industrial plants are rejecting water as unfit for their uses. Swimmers are finding beaches posted "UNSAFE FOR SWIMMING." Water skiing? Not when

the coliform bacterial count *per drop of water* has reached 80 at the Detroit waterfront; 65 in the Androscoggin River; 20 in the Mississippi at St. Louis. (A count of five per drop is considered unsafe for swimming.)

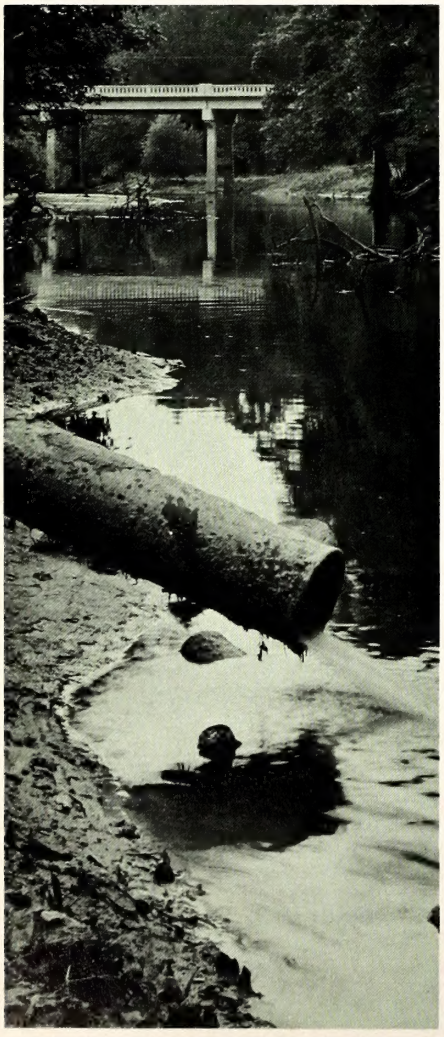
Bad news for fishermen! Last year pollution killed 50 million fish in rivers and coastal waters. These are only the reported kills.

Radioactive wastes have been found in the Colorado River drainage, danger signals of more trouble to come as we enter the atomic age. Floating garbage and other filth clogs water supply intakes of many cities which take their water from open streams. Potent fumes from New Hampshire's Androscoggin River have peeled the paint from the walls of nearby buildings.

Detergent foam runs from water faucets in several states—you brush your teeth in someone else's dishwater. Acids, seeping from mines in Pennsylvania and West Virginia, have polluted streams and poisoned wildlife. Chemical pesticide sprays are lining lake and stream banks with dead fish. Unsewered septic tanks drain into underground waters, and farm chemicals are finding their way into subterranean streams. Oil spills have killed countless birds and spoiled many beaches.

Pollution in a Wake County river.

PHOTO BY JACK DERMID



SINCE time immemorial, water has been known as the natural purifier. Nearly all religions in one way or another use water as the symbol of purity. Yet two presidents of allegedly the most advanced nation on earth have called the pollution of American waters "a national disgrace." Why?

The problem hit with run-away speed. We were using only 160 billion gallons of water daily in 1945. Today, we use 355 billion gallons. The average home uses 60 gallons daily. It takes only three gallons of water to wash dinner dishes by hand, twice that amount by machine. It takes two gallons to flush garbage down the drain, five gallons a minute to take a shower.

The big jump in water usage has come with industrial growth. It takes 500 gallons of water to manufacture one yard of woolen cloth; 320,000 gallons to make a ton of aluminum; 500,000 to make a ton of synthetic rubber.

With a fixed supply of 315 billion gallons of fresh water available today, *we must re-use our water*. The Public Health Service estimates that the total flow of the Ohio River is being used 3.7 times before it reaches the Mississippi. By the time the water in the Mahoning River reaches Youngstown, Ohio, it has been reused more than eight times. That's why water pollution is so dangerous to us all.

But most citizens are blissfully unaware of where their water comes from, and unconcerned about where it goes. As a result, both cities and industry have dragged their feet. "Of all our public works projects, waste treatment facilities are the least glamorous and the hardest to sell," says McCallum.

A few industries have exerted political pressure to evade anti-pollution laws. One popular claim is that "the plant will have to shut down" if forced to comply with the law, thereby throwing local people (who are also voters) out of work. "To the best of my knowledge, we have yet to shut down an industry or defeat a mayor," says James M. Quigley, assistant secretary of Health, Education, and Welfare.

All 50 states have water pollution laws, but enforcement is sometimes indifferent. You are more likely to be fined for throwing a candy wrapper out the car window in some states, than for dumping poisons and ruining a stream.

THE Federal Water Pollution Control Act passed in 1956 started the ball rolling with its powerful one-two punch: (1) construction grants to cities, and (2) threat of court action. Cities were spending less than $300 million annually on sewage treatment plants before the act was passed. But with the help of federal grants—first $50 million annually and then nearly double that figure—cities are now building at the $600 million rate per year.

The Division of Water Supply and Pollution Control has had 25 cases since it got more enforcement teeth. Fifteen were initiated by the Secretary of Health, Education and Welfare, and the rest by state governors. In none of these cases was a court injunction necessary. Mere threat of federal action caused offenders to clean up.

Dramatic progress has been made along the Missouri River where ten years ago not one major city treated its sewage. Today, Sioux City, Omaha, Kansas City and St. Joseph all have treatment plants in operation or under constructon, and meat packing plants have really cleaned up. St. Louis recently voted a $95 million bond issue for waste treatment.

Many industries have invested millions and gone to much

trouble to reduce water pollution. Through the National Technical Task Committee on Industrial Wastes, organized in 1950, major industries work with the federal government in task groups with mutual problems.

As a direct result, the Shell Oil Company plant at Anacortes, Washington, has installed a complete treatment system to avoid polluting the area's waters and to protect the local commercial and sport fisheries. Kaiser Steel at Fontana, California, reclaims integrated mill wastes with a settling and recycling system which keeps its water requirements at a minimum. The Allegheny County Sanitary Authority at Pittsburgh has a joint treatment operation in 68 communities and more than 100 industrial plants.

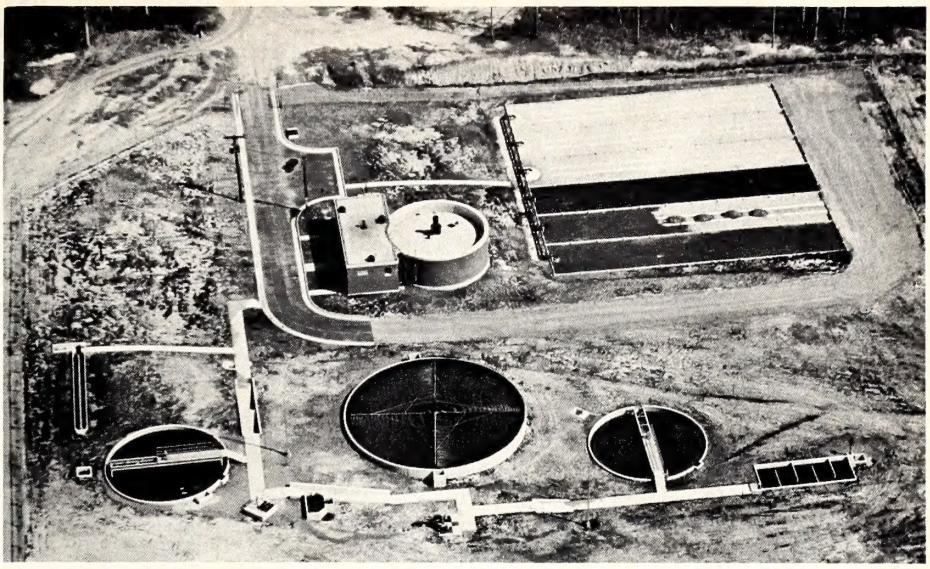
But despite all of these efforts, the pollution of our waters is the worst in history, most experts agree. We're making gains in some areas; in others, we appear to be losing. Our water, when doctored with chlorine and up to a half dozen other chemicals, has been about as safe as any in the world. But some responsible scientists are beginning to question: Is this safe enough?

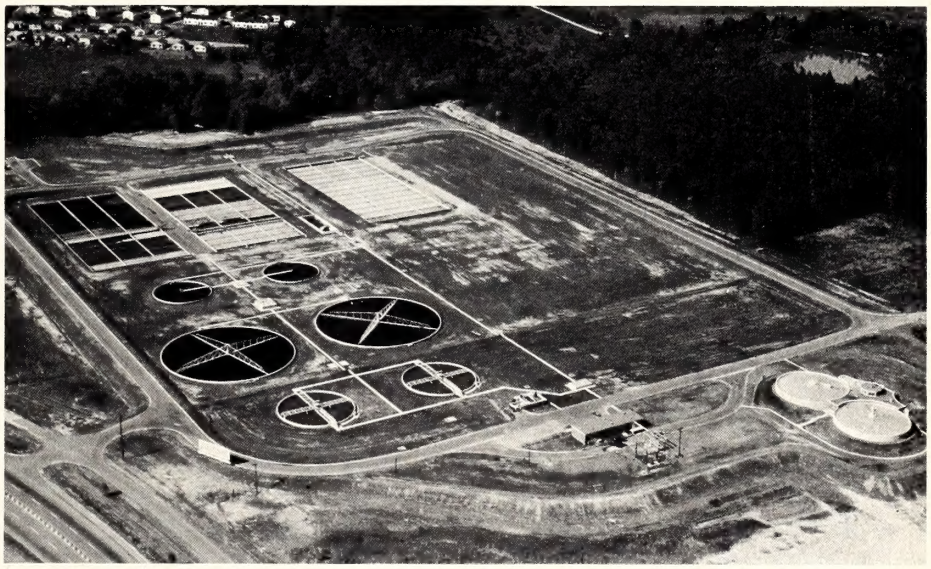
As population skyrockets and industry expands, water intakes and sewage outlets are jammed closer and closer together. Sewage treatment plants are not the cure-all that most of us blissfully assume. A third of our cities use only primary treatment (screens and settling basins) which at best remove only 35 percent of the organic wastes. More efficient plants use a secondary treatment (bacterial action to eat up the dissolved organic matter) which removes up to 90 percent of this material, but leaves many other pollutants untouched.

Chicago, for example, has the best treatment available. Yet they pour an effluent into the Illinois River daily that is equal to the raw sewage from a city of a million people containing 3,435 tons of solid wastes.

Moreover, our treatment processes are out of date. They cannot remove the complex wastes resulting from manufacture of such substances as plastics, detergents, synthetic fibers, pesticides, and medicines. Some synthetic chemical wastes cause tastes and odors. A large number are highly toxic to fish and aquatic life. Many do not respond to biological treatment and persist in streams for great distances. "We do not know how to detect most of these compounds in water, or how to treat or remove them in waste effuents. Nor do we know of their long range toxic effects on man," the Public Health Service warns.

Each year increasing amounts of these wastes come into our water supply intakes. Obviously, even with chlorine cocktails to kill bacteria, we are subjecting ourselves to increased exposure to harmful wastes, including radio-active substances and lethal pesticide chemicals.





Some private firms have taken steps to treat industrial wastes. Photos courtesy L. E. Wooten & Co., Raleigh (above) and William C. Olsen & Associates, Fayetteville (below).

OUR future water needs are staggering. By 1980—just 17 years from now—we will be using 600 billion gallons of water daily. By the year 2,000, a trillion gallons. It would take a tank car train 600,000 miles long to haul it.

Unless we can find a cheap way to convert salt water to fresh, hydrologists estimate our maximum fresh water supply will be only 650 billion gallons a day. So re-use is a must. We'll need to re-use our water six times by 1980, according to some authorities.

These are the increased demands of the immediate future, yet we are barely holding our own today. "Even those states

• **continued on page 26**

Time for Carp

MISSOURI CONSERVATION COMM.

by Frank Mooney

WHEN hot, humid days of mid and late summer send most of the game fish lunkers to deep, cool water, its time for a fishing change of pace. But just because most of the game fish have semi-retired from the game called "dodge the hook", it's no reason for you to give up when there is still plenty of action. To hang into a fish that will fight harder and longer than many a game fish, try the carp.

A fisherman comes in contact with all types of people in the fishing world. You will find some above fishing for "trash fish" as they are sometimes called. It's easy to be misled into thinking that fishing for the lowly carp is a pure waste of time. It may take a long time to get up enough nerve and will power to tackle him.

One hot summer day, several years ago when my type of fish had quit striking, I began to recall some of the tales of fishermen that carp would bite through the long, hot summer. I was ready to catch anything that would put a nice arch in my spinning rod. Some of the stories told of anglers hooking carp on cane poles that broke line and pole. An old man related to me how he came across a group of bank fishermen gathering up what was left of their poles and casting rods, stating that big carp had broken everything. They were going home.

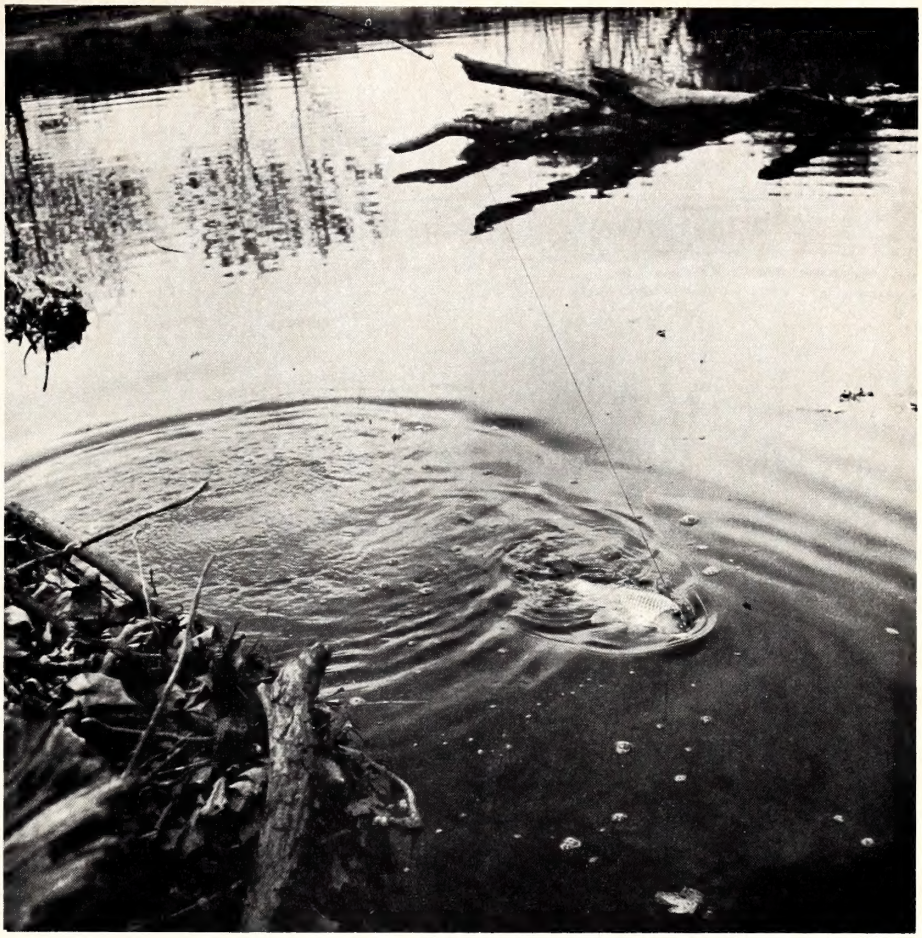
I decided I would sneak off alone pretending to be after game fish and with the other fishing so slow I wouldn't miss out on much anyway. I had heard from reliable sources that it was best to bait a place before fishing. Using a piece of cloth filled with cornmeal and rocks to keep the bait down, I threw it where I wanted to fish. After several hours, carp started coming in the eddy like cows at milking time. Being unfamiliar with the slow sucking taps of the carp as one takes the bait, my average for the day was low; but the ones that didn't fool me well made up for the ones I missed. After that day, carp were added to my fish list. In many of our streams and reservoirs, rough fish often become quite abundant during the late years of their existence. Then you have better odds to catch him than game fish. If you know anything about a lake you can catch carp. Unless you know the waters exceptionally well, it's a different story with game fish. When you get carp biting, it's nice to know you can catch as many as you like because size and creel limits are unknown in the carp world. And all the time you are making more room for the game fish.

Carp can be caught with most any type of fishing gear. I prefer the open face spinning reel with 12-pound test line. Carp weigh up to 30 or 40 pounds, and the heavy line is also needed for encounters with stumps and logs. The best way to rig up your terminal tackle is with a sliding sinker, placing a split shot about six inches above the hook. Most any type hook will catch carp, but I prefer a number 4 of fairly heavy wire. When a carp picks up and mouths your bait, the least resistance will cause him to drop it. To keep him from parting company with your bait, you have to set the hook fast and then hold on.

At times, carp will take several kinds of bait all the way from sweet corn to shrimp. For all-round fishing, dough seems to prevail. You can buy the ready-made dough at most stores around a lake that has been stocked with carp. Carp will bite after dark but it's hard to catch them unless you have a bright light to detect those light taps. Some pond owners have lights installed around their ponds so anglers can catch carp night or day.

Carp were first introduced in 1879 when a shipload arrived in the United States from Germany. The Government believed that carp would become a valuable food fish as it already had in

Carp may fight longer and harder than some game fish. No great jumper, but their determined runs and lunges are not easy to stop.



MISSOURI CONSERVATION COMM. BY DON WOOLDERIDGE

Europe. They found out later to their sorrow that in most cases this overgrown minnow crowded out the more desirable fish. In China, carp is still a valuable crop. Carp are cultivated in flooded fields and rice paddies. When they are ready to harvest, the fields are drained.

One afternoon I loaded my station wagon and drove to a large lake near my home. Reaching the lake around one o'clock I proceeded to bait a spot with cornmeal and canned dog food after punching several holes in the cans. Cans will keep a place baited longer than other baits in a sack. Carp with their vacuum-cleaner mouths can soon clean out a sack. The first couple of hours were slow with only a few small channel cats interested. The bait started pulling the carp in a little after 3 p.m.

It's best to set the rod against an ice chest or anything sturdy so the tip of the rods will be almost straight up. When rods are fixed this way the least sucking of the bait will send a tell-tale sign. If the smaller fish are not biting, it's best to keep the line a little slack. At the least sign of the line going out, set the hook. If you keep the line too slack, the small fish can get your bait without even tightening the line. Sometimes a carp will swallow the bait before moving out and if you're not quick to respond, he will take rod and all. My first fish sucked on the bait a bit, then tried to take it. The moment I set the hook he started the other way. I was fishing off a pier in about 30 feet of water. A carp can really show his talent in a situation like this.

After I got him off the bottom, he started making long bulldozing runs. The line was singing in the water when it came by me heading for other parts of the lake. It took several minutes to get him in close enough to see the pier. After he saw me and the pier, he went wild, tearing off line before I managed to turn him around. Several minutes passed before I was able to slide the net under him. It wasn't such a large one in pounds, but in spirit and strength, he really totaled up.

A carp in the four- or five-pound class will put quite a bend in a rod and this one had proved it. After I got the second one to the pier, he tried his best to stay under it and tangle the line. It took about five minutes to get him netted. I hooked a large-scaled carp and thought I had hung up. It wasn't any larger than the first two, but it gave a better account for itself. The first two were small-scaled or mirror carp. It was getting close to sundown when I strung my fifth carp.

My line tightened and went slack. The line tightened again, and this time I set the hook and tried to reel in. Try was all; he took line instead, starting that long, powerful drive for which they are famous. Finally I turned him and he went the other way. After getting him close to the top, he still made those short, powerful runs. For brute strength a carp is hard to match. He never did give up like some game fish would have, but I tired him enough to horse him in the net. He weighed almost six pounds on my hand scales.

Each year when the game fish almost stop striking due to warm weather, instead of hanging up the rod and waiting for hunting season or cool weather, try a carp caper.

Large catches of carp are not uncommon. And there is no creel limit.

MISSOURI CON. COMM. BY DON WOOLDERIDGE

NORTH CAROLINA WILDLIFE

RESOURCE-O-GRAM

A ROUNDUP OF THE LATEST WILDLIFE NEWS

Hunting, Combination Hunting-Fishing Licenses on Sale

Hunting licenses and combination hunting-fishing licenses went on sale throughout North Carolina effective August 1. License dealers also have available copies of the 1965-1966 nonmigratory game and trapping regulations. Copies of regulations concerning hunting migratory game birds, as established by the U. S. Department of the Interior may be obtained by writing to the Director, Bureau of Sport Fisheries and Wildlife, Washington, D. C.

Violation Reporting Made Easy

Published elsewhere in this issue, and on the back page of the current hunting and trapping regulations are the telephone numbers of 14 Wildlife Commission radio stations. To report a fish, boating or game law violation, call one of these numbers. A Commission radio operator will take your message and immediately get in radio contact with the nearest wildlife protector. If a long distance call is necessary, you may call collect if you inform the radio operator that you wish to report a game or fish law violation. On failure to reach the first number called, try the next nearest location. Telephone numbers of local wildlife protectors are listed at your sheriff's or Police Department office.

Hunter's Choice Deer Season

Landowners and sportsmen wishing to recommend either-sex deer hunts in their localities should file requests with the Wildlife Commission on or before August 9. Such hunts will be allowed on privately owned lands, and as in the past, on the basis of local requests.

Upon receipt of requests the Commission will investigate local situations to determine whether deer populations warrant the taking of antlerless deer. If this is found to be the case a public hearing will be held near the area being purposed to determine local sentiment in regard to the proposal. Such hearings will be held during the week of August 30. Results of these hearings and other findings will then be considered by the Commission in time to make an announcement of approved areas and dates during the week of September 20. Either-sex deer hunts scheduled this year will be held during the month of December.

Megaphone in hand, Murray Asheley coordinates the Chowan County swimming class at Sandy Point.

Operation Wetback

Chowan, Bertie, Tyrrell and Perquimans counties have demonstrated that swimming instruction can be offered to large groups, even in rural areas. This is the story of their program.

THE problem of getting organized instruction of any kind to families in predominately rural areas has always been a difficult one. Some people may have to drive many miles to a central point. Farm activities, particularly during the summer, greatly limit the time a farm family can be away from home.

Yet this problem seems to have been pretty well overcome in several northeastern North Carolina counties when a recognized need for swimming instruction prompted various groups to do something about it. Vast areas of water in the form of sounds, rivers, and creeks in this section furnish boundless opportunities for recreation.

Through the auspices of the Agricultural Extension Service in Perquimans and Tyrrell counties, a woman's club in Bertie and the Civil Defense organization in Chowan, Red Cross swimming lessons were provided for over 800 rural and urban children and adults who decided they needed to learn to swim. Advance publicity was provided through the schools, 4-H groups, churches, Scouts, various civic groups and the news media.

Chowan County had two organized groups totaling 384 people. One group met at Arrowhead Beach on the Chowan River and the other assembled at Sandy Point on Albemarle Sound. Murray Ashely, Civil Defense Director and Red Cross Chairman for Chowan County, coordinated the water safety program.

The Perquimans County swimming instruction was offered at Hertford Beach on the Perquimans River. The wide, sand-bottomed stretch of water with a shallow, gradually sloping bottom is an excellent spot for large beginner classes. The county Agricultural Extension Service sponsored and organized the course, with over 200 people, mostly rural youngsters, benefitting from the instruction.

Last year Tyrrell County had its third straight swimming program coordinated by the Agricultural Extension Service and the Scuppernong Community Development Group. One hundred and three students took courses from beginner to Senior Life Saving in 1964. County Agricultural Agent Murray Goodwin estimates that over 75 percent of the rural nonswimmers of three years ago have now been exposed to supervised courses.

The Bertie County Group was sponsored by the Colerain Woman's Club and included 60 students, mostly beginners. Part of their instruction was received at the Chowan College indoor pool at night. The class included a grandmother and two of her grandchildren—all three of whom successfully completed the beginner tests and were awarded Red Cross certificates.

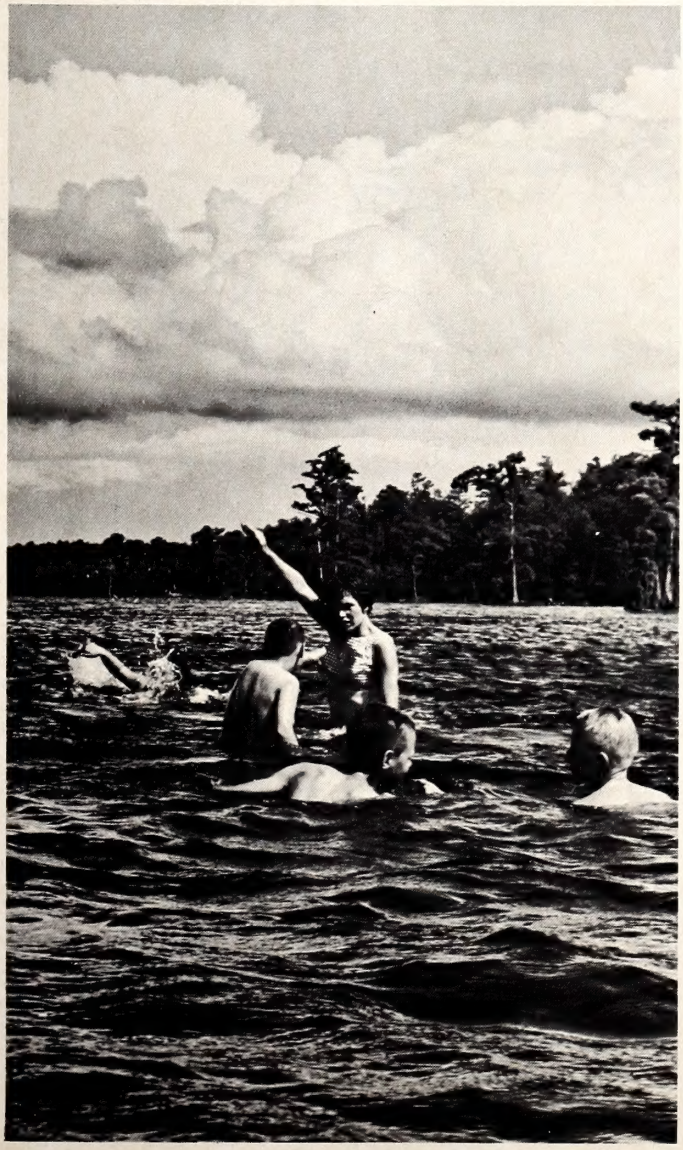
The various county programs were coordinated through the efforts of volunteer American Red Cross instructors and Richard Thornton, the Red Cross Field Representative. Swimming instruction was offered for one hour per day for two weeks, with each group meeting a different hour. This enabled some of the instructors to teach an early morning class at Colerain Beach (Bertie County), drive to Sandy Point (Chowan County) for another, lunch and then go to Hertford Beach (Perquimans

Good instructors and strict adherence to the rules of water safety are the keystones to effective swimming classes.

You should be able to count about 130 students in this formation at Hertford Beach in Perquimans County.

Chorus line? Not quite. Just a series of exercises to improve coordination and strengthen muscles for swimming.

This group of Intermediates is developing skills that will permit them to progress to the Swimmer group.



County) for the third group. Arrowhead Beach (Chowan County) and Bulls Bay (Tyrrell County) groups were completed later in the summer utilizing some of the skills of swimmers trained earlier.

Students were organized into groups according to their swimming ability, or lack of it. They included: Beginner, Advanced Beginner, Intermediate Swimmer, Swimmer, Junior and Senior Life Saving. The instruction included a minimum of ten hours at the beaches and Lifesaving students had to complete their training by traveling to indoor college pools. Some had to travel 100 miles every Saturday morning until they had satisfied course requirements.

George Burdick, wildlife biologist for the North Carolina Wildlife Resources Commission, used his vacation to assist in the program. Besides teaching in all groups, he assisted in organization and served as director of the Bertie, Perquimans and Tyrrell programs.

The instructors were certified Red Cross volunteer instructors or Red Cross-trained swimmer aides. They donated their time and talents to help others safely enjoy, to a much greater extent, the many pleasures to be found in water sports. This involved a sacrifice in time and money for many of them; we commend them for their public spiritedness.

Marine Style

Conservation

PHOTOS BY U. S. MARINE CORPS

THE two United States Marine Corps bases in North Carolina, Camp Lejeune and Cherry Point Air Station, include large areas of wildlife habitat. This habitat varies in quality, as does any other part of the state. The nature of activities on military bases may tend to almost preclude some solitary wildlife species, such as the bear, and encourage the buildup of others, such as deer.

Oddly enough, Camp Lejeune, with its many and varied training activities involving men and vehicles over practically all the base except impact areas, has a wild turkey population that is the envy of much of the state. Most of the state's fish and game species are represented on the two bases; mountain trout and grouse are about the only exceptions.

Since World War II both bases have enjoyed a much more stable population, and consequently experienced a growing need for recreation to meet the needs of military personnel and their families. Hunting and fishing are favorite forms of recreation for military families as well as civilians.

Lejeune Boy Scouts and Rod and Gun Club members are shown cooperating in planting part of the 25,000 habitat improvement plants supplied by the Wildlife Commission in 1965.

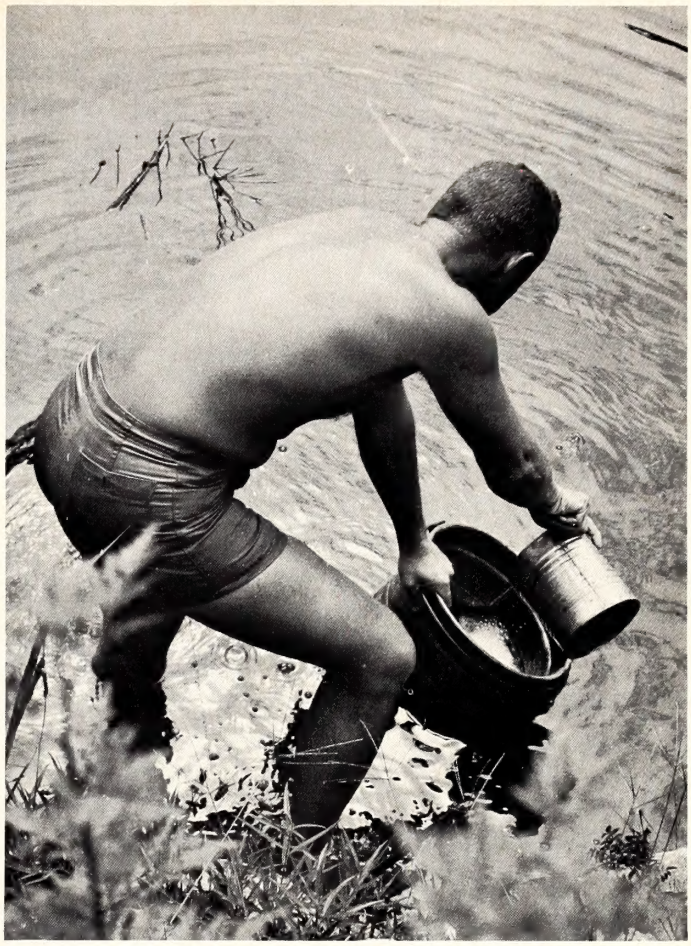
These Leatherneck loggers are clearing timber from the Wallace Creek Basin that will be flooded to form a 210 acre recreation lake at Lejeune. Only hydrophytic trees, such as cypress, will be left standing for sanctuary and food values to waterfowl.

Members of the Lejeune Rod and Gun Club are shown applying fertilizer and lime to one of the 7 fish ponds on the base. Note the wood duck nest box at the right of the photo.

Camp Lejeune is one of the few places this scene can still be observed. Late afternoon finds a wild turkey hen feeding on a small grain plot, one of 45 planted on the base.

Lejeune and Cherry Point have progressive conservation programs to insure the perpetuation of their wildlife resources for the enjoyment of their people. In addition to their own personnel, they seek technical advice and assistance from county, state and federal conservation agencies. They cooperate wholeheartedly with wildlife conservation agencies. We of the North Carolina Wildlife Resources Commission offer this bit of gratitude for services rendered in protecting, developing and conserving the wildlife resources of the state.

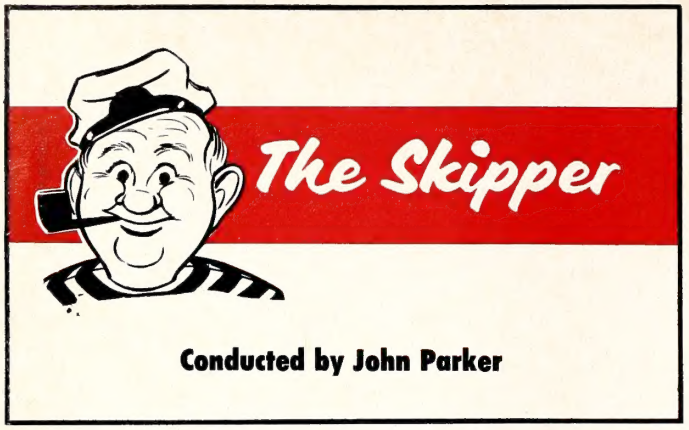
The accompanying photos show only a few of the varied conservation activities of the two bases.



A biologist of the U.S. Fish and Wildlife Service pours rotenone into Burns Pond to remove an undesirable population of fish in preparation for stocking with fish more suited to the Cherry Point habitat and the sporting pleasure of base personnel.

Wildlife Protector Willis is shown releasing largemouth bass fry in Hancock Creek at Cherry Point. He arranged for the securing of the fish in addition to assisting with the stocking.

Food plots like this provide supplemental food for Cherry Point's big and small game. The dominant plant in this mixture is millet. It furnishes grazing during the growing season and large quantities of seed when mature.



Conducted by John Parker

WHAT a shock it must be to learn that your outboard motor has been stolen. The thoughts that would run through your mind might progress as follows: first, after the eyes have relayed the sad message to the brain, comes a moment of disbelief, then you utter a few choice words which need not be described here. Next you say to yourself as you stand sulking with your arms loaded with tackle, "Well, no fishing today; if I had only had it locked," and "It wasn't even paid for!" and finally as you move slowly back up the dock, "If I had only had it insured."

Most of us have never experienced the above situation. But it does happen a number of times each year in North Carolina and thousands of times annually throughout the nation as we shall point out later.

In order to accurately determine the number of boats and motors stolen annually in this state, we would need to survey each owner at the end of a year and ask if he has any equipment missing. Such a survey would be next to impossible.

Records maintained by the State Bureau of Investigation and the Wildlife Resources Commission tend to indicate that thieves are not overly interested in North Carolina boats and motors. There is some indication that the situation has improved in the past few years in this state. And a survey of the stolen motor list of two leading outboard motor manufacturers covering a period of one year had only three entries from North Carolina. However, I believe that records of local authorities, which would be more detailed for a particular area, would show a higher frequency of boat and motor theft.

The records seem to indicate that there are few rigs stolen in North Carolina. If this is true, fine; but we must remember that the complete story is not known. No doubt hundreds of North Carolina boaters would testify to a different story because too often the transom notch is found empty or an entire rig is trailed away while the owner is inside a sport shop buying a new lure.

Last season, *Sports Illustrated* ran an interesting and hilarious article on the very serious subject of boat theft. As I recall the story was actually told by the thief who was eventually caught. Some of the narrow escapes that this skilled character had prior to his capture and some of the ingenious schemes that he used to obtain the rigs would make many of our modern TV spy thrillers seem like Mother Goose stories. It is the professional like this who takes the heaviest toll on boats and motors, but every amateur has to get a start. Let's hope it is not with your motor or mine. The following story from Evinrude may help prevent your rig from putting money in the pocket of the boat thief, amateur or pro:

Carelessness cost the outboard boatman $1,000,000 last year. That's the price tag for engine thefts in 1964 based on a recent survey conducted by Evinrude Motors.

The problem of stolen engines has grown steadily in recent years. More than 500 thefts were reported to Evinrude last year, an all-time record, and that's just one manufacturer. Multiplied across the board, engine thefts probably hit the million dollar mark.

The problem of motor thefts is probably worse than the survey showed. Evinrude believes many thefts were never reported to the company.

Portability is one big reason why thousands of boatmen prefer small horsepower motors. Apparently this feature attracts the thief as well. Better than one-third of the thefts involved motors of less than 10 horsepower. That should serve a warning to the fisherman who has the habit of leaving his rig unattended.

Weight is no deterrent. The Milwaukee firm stated that 60 outboards in the 60, 75, and 90 horsepower ranges were lifted by light-fingered but strong-backed thieves.

One of the prime reasons for this rising crime rate is carelessness. Outboard owners don't take the same precautions with their rigs that they do with their automobiles. Most people roll up the windows and lock all the doors when they leave their car in a dimly lighted parking lot. Strangely,

• **continued on page 26**

Outboard motor theft is a serious problem for boaters. And very few motors can be successfully traced once they have been stolen. Precautions will be helpful in avoiding theft.

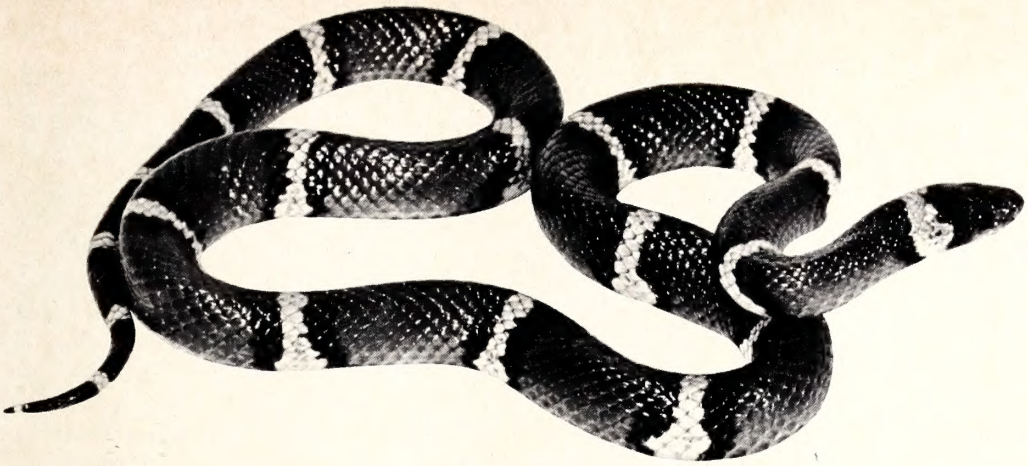


PHOTO BY JOEL ARRINGTON

The Scarlet Kingsnake

William M. Palmer and Franklin F. Snelson, Jr.
North Carolina State Museum of Natural History

OFTEN considered among the most colorful of North American snakes, the scarlet kingsnake, *Lampropeltis doliata doliata,* may be identified by its bright scarlet or crimson color with rings of yellow and black completely encircling the body. This harmless species is often confused with the equally inoffensive scarlet snake and with the extremely venomous coral snake. From the coral snake it can be readily distinguished by its *red snout* and the *contact of the red and black rings.* The snout of the coral snake is *black* and the *red and yellow rings touch.*

The pattern of the scarlet snake consists of black-bordered red blotches with yellow or grayish interspaces. The snout is red but *the belly is unmarked.* Apparently there are two very similar subspecies of this small kingsnake in North Carolina, and in one (correctly called coastal plain milk snake) the red areas are normally enclosed in black margins with yellow interspaces. Nevertheless, conspicuous black pigment is usually evident on certain portions of the belly. The average length of the scarlet kingsnake is about fifteen inches, but several specimens nearly two feet in length have been collected from the State.

The scarlet kingsnake ranges from North Carolina south throughout Florida and westward into the extreme eastern tip of Louisiana. From the Gulf States the distribution extends northward into central Tennessee. The North Carolina range covers the Piedmont and Coastal Plain, with the coastal plain milk snake being recorded in the literature from the north-central portion of the state to the pine barrens of southern New Jersey.

The scarlet kingsnake is most often found in areas of longleaf pine and wiregrass so abundant throughout much of the Coastal Plain. In such sections these snakes are not often seen abroad, and are usually collected only through the laborious process of systematically tearing apart rotting logs and stumps. Specimens also have been discovered inside decaying cypress logs in wet lowlands, and occasional examples may be discovered at night crossing paved roads.

When first captured some specimens will not hesitate to bite, but the small teeth can do no damage to human skin and most individuals soon submit to handling without any show of resentment.

The food consists mainly of lizards, small snakes, and the young of smaller mammals. Prey is overcome by constriction in typical kingsnake fashion.

Mating occurs in the spring and there are but two available North Carolina records concerning the eggs and young of this most secretive species. In both cases clutches of three and six eggs were discovered inside rotting pine stumps in the late summer. The newly-hatched young averaged about five inches in length upon emergence on August 23 and September 11. These juveniles were kept alive for several months during which time they greedily fed on *lizard tails* until large enough to consume small lizards and very small snakes.

The attractive coloration of the scarlet kingsnake has made it a species much in demand by reptile fanciers throughout the country. Many captive specimens will accept nothing but lizards if such food is readily available. If captives are housed in clean, dry cages and provided with a strip of bark under which to hide, scarlet kingsnakes usually do fairly well in captivity. It is unfortunate, however, that many of these snakes collected and shipped to northern cities for the "pet trade" soon die from a lack of proper food.

• **Next Month: Brown Snake**

Pleasant Vacation

FOR years my wife and I argued over where we would spend our vacation. We had to think of the children's enjoyment; still she always wanted to go to the mountains, and I always wanted to go fishing. Every year someone ended up disappointed about our vacation.

This year we decided to do something to make everyone happy. A family meeting was held and each member was to submit his idea of a perfect vacation. The children wanted to go camping and swimming, the wife still had her heart set on going to the mountains; and I still wanted to go fishing. This settled nothing.

A few days later as I was going through my billfold, I found my new fishing license. That inspired an idea. Why not check with the issuer of the license, the Wildlife Resources Commission?

The first day that I could take off from my work, my wife and I went to Raleigh to consult with someone at the Commission. We were puzzled about where to go and whom to see. As we got off the elevator on the fourth floor of the Motor Vehicles Building, the first office we saw was part of the Division of Education. The secretary at the desk was very intent as we told her of our problem. She gathered together some pamphlets concerning different lakes, fishing areas and places of interest in North Carolina. We looked these over while she stepped into the next office down the hall.

Presently, the Chief of the Division of Engineering asked us to come into his office. He introduced himself and asked us to have a seat as we related to him the purpose of our visit. There was a huge North Carolina map hanging on the wall and it pinpointed all of the Commission's boating access areas. After a moment's thought, he rose from behind his desk, turned to the map and showed us several locations which he hoped might suit our needs of fishing, mountain scenery, swimming and camping.

There were several spots which he recommended. One in particular was on Fontana Reservoir, deep in the Smokey Mountains. The Wildlife Commission had a boat launching ramp there and the U. S. Forest Service had charge of the camping facilities. He explained to us that this was one of the few areas in the state having camping facilities near it and that the Commission only managed the launching ramps and parking area. The chief explained to us not to expect camping facilities near all the boating access areas; this was just one exception. The Forest Service and other state agencies had charge of recreational and camping facilities. Swimming was also available at Fontana even though there was no designated swimming area marked off.

He also explained the processes by which the Commission acquires, develops and maintains access areas. Just a boat launching ramp and parking lot involve months of investigation, construction and thousands of dollars.

His secretary gave us a map of the state with all of these spots throughout the state located on it. Additional sheets attached to it gave the state and county highway numbers to the exact spot where each area was located.

Two weeks later, vacation time finally arrived. My wife packed our swim suits, outdoor clothing and the camera. I packed the camping gear, rods and reels and hooked my boat to the back of the car.

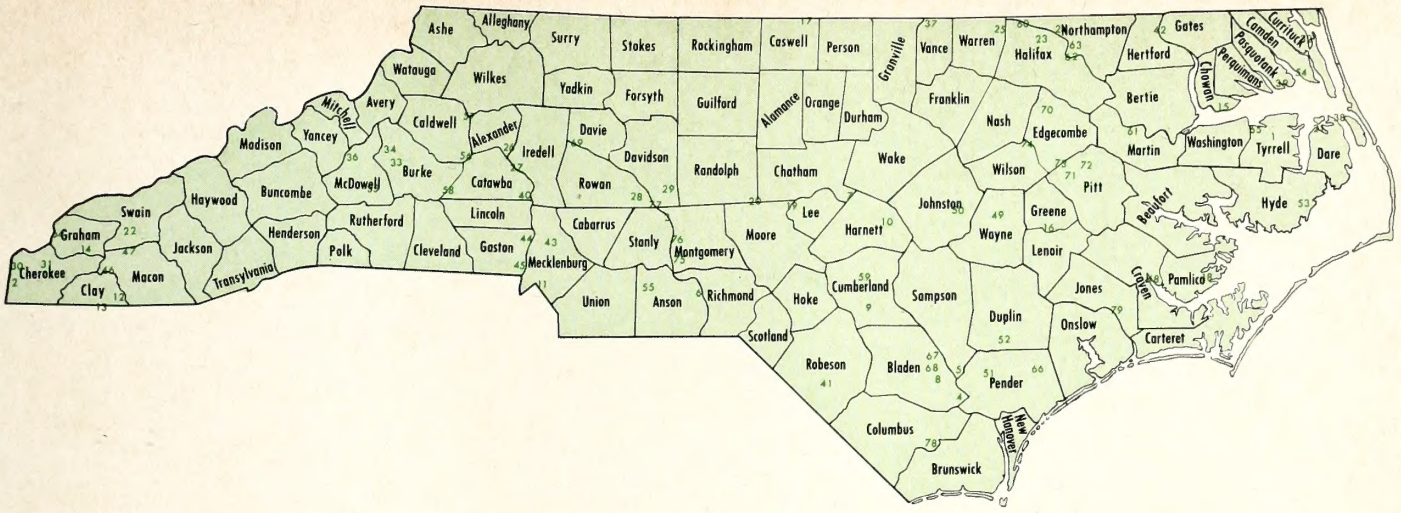
The next morning we were off for the mountains and a whole week's vacation. The children were as impatient as we were to get there. In late afternoon, following the directions that we got two weeks before, we arrived at Fontana Reservoir. We drove as far as the camping area for that day. My wife and I set up camp and started supper. The children were off romping in the woods, enjoying nature. It was truly a beautiful place. My wife was snapping pictures left and right.

First thing next morning, I took my outboard down to the launching ramp to set out for some fishing. The place was littered with beer cans, paper, and leftovers from others that had used the area. I didn't know if I wanted to stay there or not. It was only five a.m. then and I would talk with my wife later, after I had done some fishing. I couldn't take the chance of the children getting hurt while playing around such trash as was scattered around.

The fish were in a cooperative mood and the sun wasn't too high by the time I had two smallmouth, one largemouth bass, and three white bass. As I brought the boat near shore, I noticed a man in uniform. He was picking up something. I found out later that he was a wildlife patrolman. He met me at the water's edge and helped me beach my boat. He was there to check the condition of the area which was part of his job. It really disgusted him to think that people could actually litter such a beautiful place.

After looking at my catch, he asked to see my fishing license. (These men are really on the job.) Noticing the address on the license, he asked me how I happened on to this particular spot for a vacation. I told him of our visit to Raleigh and our talk with the Engineering Chief. He agreed that this was a good spot for a family outing. We talked about fishing, boating and so on; he had several helpful suggestions. As he left, he assured us that the area would be cleaned up before the day was over.

On the way back to our camp site, I remembered what the Division of Engineering Chief had told us about how they go about constructing and maintaining an



access area. This and other Wildlife Commission divisions are constantly on the alert for suitable sites in the general areas previously approved by the Commission. When available sites are found that appear practical for development, the Engineering Technician employs a registered surveyor and proceeds with preliminary steps for purchasing the property. When any difficulty or questions arise, the Division Chief is called upon.

The Commission has three methods by which they construct access areas. Projects costing less than $1500 can be developed on a force account basis. This method uses personnel and equipment of the Commission and materials are purchased locally. Projects costing less than $3500 may be built on an informal contract basis. This consists of taking a minimum of three bids locally but without the necessity of rigid plans and specifications. Proposed projects costing more than $3500 are formally contracted with plans and specifications in detail.

Next, the Chief of the Division or Technician, goes over the site with a consulting engineer and points out what is to be accomplished. The Chief reviews the plans to make sure that they are correct and include what is desired. Supervision and inspections during construction are handled by the consultant or one of the Engineering Technicians.

After construction is completed and the area is in use, the Division of Protection checks the area periodically, reporting the condition to the Division of Engineering and takes care of any minor maintenance needed. Major repairs, if necessary, are the responsibility of the Division of Engineering.

The week that we were at Fontana Reservoir was a very pleasant one indeed. We made friends with many of the others camping there and we plan to meet them up there next year for another week of mountain pleasure.

ACCESS AREAS

See map above

1. **ALLIGATOR RIVER** (Gum Neck Landing) Tyrrell County. 12.5 miles south of Columbia on NC 94, 5.3 miles off NC 94 to area.
2. **APALACHIA RESERVOIR** Cherokee County. Immediately downstream from Hiwassee Dam on the south side.
3. **BADIN RESERVOIR** (Lakemont) Montgomery County. South of N. C. Highway No. 49, west of N. C. Highway No. 109.
4. **BLACK RIVER** (Hunt's Bluff) Bladen County. Eight miles east of Kelly, south of N. C. Highway No. 53 on Secondary Road No. 1547.
5. **BLACK RIVER** (Ivanhoe) Sampson County. Just west of Ivanhoe on Secondary Road No. 1105.
6. **BLEWETT FALLS RESERVOIR** (Pee Dee Recreation Area) Anson County. Two miles north of Pee Dee River Bridge (U. S. Highway No. 74) via Secondary Roads Nos. 1748 and 1747.
7. **CAPE FEAR RIVER** (Avent's Ferry Bridge) Chatham County. Two miles southwest of Corinth via N. C. Highway No. 42 at Avent's Ferry Bridge.
8. **CAPE FEAR RIVER** (Elwell's Ferry) Bladen County. Two miles northeast of Carvers at Elwell's Ferry via Secondary Road No. 1730.
9. **CAPE FEAR RIVER** (Fayetteville) Cumberland County. Four miles south of Fayetteville on N. C. Highway No. 87.
10. **CAPE FEAR RIVER** (Lillington) Harnett County. Three miles east of Lillington.
11. **CATAWBA LAKE** (Wither's Bridge) Mecklenburg County. Eleven miles southwest of Charlotte on N. C. Highway No. 49.
12. **CHATUGE RESERVOIR** (Jackrabbit) Clay County. Approximately 7 miles east US 64, turn south 2.5 miles on Secondary Road No. 1154, west .8 miles on Secondary Road No. 1144 to area.
13. **CHATUGE RESERVOIR** (Ledford's Chapel) Clay County. Five miles east of Hayesville via U. S. Highway No. 64 and Secondary Road No. 1151.
14. **CHEOAH RESERVOIR** Graham County. Adjacent to N. C. Highway No. 28.
15. **CHOWAN RIVER** (Edenhouse Bridge) Chowan County. Adjacent to U. S. Highway No. 17.
16. **CONTENTNEA CREEK** (Snow Hill) Greene County. At Snow Hill, one block east of U. S. Highway No. 258.
17. **DAN RIVER** (Milton) Caswell County. Just northwest of Milton on N. C. Highway No. 62.
18. **DAWSON CREEK** (Oriental) Pamlico County. Off County Road No. 1302, four miles southwest of Oriental.
19. **DEEP RIVER** (Carbonton) Moore County. Just south of Carbonton on Secondary Road No. 1621.
20. **DEEP RIVER-SANDY CREEK** Randolph County. One-half mile west of Ramseur on U. S. Highway No. 64.
21. **EAST LAKE** (Mashoes) Dare County. Three miles north of Manns Harbor on Secondary Road No. 1113.
22. **FONTANA RESERVOIR** (Meadow Branch) Swain County. 2.11 miles north of Pocahuntas on NC 28 at Swain-Graham County line.
23. **GASTON RESERVOIR** Halifax County. 4.3 miles east of Littleton on US 158, north 2 miles on Secondary Road No. 1406 to area.
24. **GASTON RESERVOIR** Northampton County. West off NC 46 to Henrico, 4.4 miles west of town.
25. **GASTON RESERVOIR** Warren County. 1 mile west of Littleton on NC 158, north on Secondary Road No. 1357 for 3.5 miles.
26. **HICKORY LAKE** (127 Bridge) Alexander County. Two miles north of Hickory on N. C. Highway No. 127.
27. **HICKORY LAKE** (Oxford) Catawba County. Southwest of Oxford Dam via N. C. Highway No. 16 and Secondary Roads Nos. 1453 and 1519.

• **continued on page 27**

In Defense of Hawks

by John Parker

WOULD you pose for a picture with a wild turkey that you had bagged out of season—accidentally or otherwise? It is unlikely. Neither would you call a local sports writer and boast of how you just "did in" two limits of ducks. Chances are since you are taking the time to read this you would not become involved in such illegal carryings-on in the first place. And this is certainly not to suggest that you do take part in game law violation. We would hope that all citizens of North Carolina abide by game and fish laws; but as evidenced by our wildlife protection program, such is not the case.

What is all this leading up to? Just this: some North Carolinians are breaking a certain wildlife law, posing for pictures with the kill and then sending the picture to their local newspaper! The newspaper in turn often publishes the photo in question and we end up with a wildlife law violation advertisement!

What law is being broken? It is G. S. 113-102, to be specific. This particular law deals with protected and unprotected birds and animals including hawks and owls. The law states that certain of these birds of prey, namely the Cooper's and Sharpshinned Hawks, and Great Horned Owl are unprotected. But what about all the other hawks and owls, the Red-tailed Hawk, Sparrow Hawk, Red-shouldered Hawk, the Bald Eagle, the Barn Owl, etc.?

The truth of the matter is that they too often find themselves at the business end of the old scatter gun or small bore rifle. In other words, *all* of the hawks (16 varieties including the eagles) and all of the owls (eight varieties have been recorded in North Carolina) are feeling the presence of the gun because of the questionable deeds of a few of their cousins.

The youngsters and adults who posed with their kill may very well have thought that they had bagged an unprotected variety and that they had broken no law. However, close examination of a number of news clippings that have come into the Wildlife Commission reveal that more often than not the species that has been killed is a protected variety. In fact, game biologists, ornithologists and bird watchers claim that the unprotected species are seen less frequently than the protected ones. It would seem then that the protected species are more likely to be the target bird than are the Cooper's Sharpshinned Hawks and Great Horned Owl.

We mentioned that in the list of birds of prey that frequent North Carolina is the Bald Eagle. If you are inclined to believe that the innocent "rabbit hawk" shooter would not take a crack at an eagle, our national symbol, the U. S. Fish and Wildlife Service reports to the contrary. A number of eagle carcasses examined in a recent survey displayed gun shot wounds.

There seem to be basically two types of birds of prey: the bird that soars at great heights, admired by anyone, is one type. The bird that is out looking for a bite to eat and occasionally takes a quail or chicken is the other type. The bird that may have been admired a few minutes earlier suddenly becomes a villain and is fair game to anyone.

Many hawks and their kin are no doubt killed because the dove shooting slowed down or because the great bird happened to glide over the wrong duck blind or sit an instant too long in an oak tree being watched by a squirrel hunter.

One would have to be rather cold hearted to admonish the youngster who has come of age

PHOTO BY EUGENE HESTER

Sparrow hawks eat numbers of insects.

and bagged his first hawk—especially when his dad gave him the go ahead. And didn't Indian boys prove their manhood by capturing eagles barehanded? One would certainly not take issue with a newspaper for putting the kid's picture in the paper; few editors have time to learn to identify all the hawks, owls, eagles, kites, and let us not forget the vultures. These not-so-handsome critters are quite beneficial too.

Perhaps the problem is built in. How much of an ornithologist can we expect the average hunter to be? Identification of these birds is not always easy. Wouldn't it be easier to protect all hawks?

True, the unprotected hawks and owls that we have mentioned do frequently take game birds, song birds and small game animals and poultry. How frequently, however, is another question.

The question that we must answer is this—are the benefits worth the cost? In other words, how many Red-shouldered Hawks, for example, must we sacrifice in order to permit the killing of a few Cooper's Hawks?

In my opinion there would not be a measurable change in wildlife populations tomorrow if all birds of prey were protected today. However, if the population

• **continued on page 25**

Want a better magazine? We would like to know what you want *Wildlife in North Carolina* to do for you. We hope that you will find the time to complete this questionnaire, tear out the page, and mail to Reader Survey, Box 2919, Raleigh, North Carolina 27602. You don't have to sign it. We appreciate your help.

I am a subscriber to *Wildlife in North Carolina.* ☐

I am a resident of North Carolina. ☐

I register a boat in North Carolina. ☐

Stories and articles I like best are:

Snakes	☐	Hunting	☐
Fish Management	☐	Fishing	☐
Game Management	☐	Camping	☐
Where-to-go Fishing	☐	Conservation	☐
Where-to-go Hunting	☐	Song Birds	☐
Nature Study	☐	Boating	☐
Photo Feature	☐	Law Enforcement	☐

I read regularly:		I would like the magazine to have:	
Everything in the magazine	☐	more photos	☐
Resource-o-Gram	☐	larger photos	☐
Skipper	☐	full color inside	☐
Crackshots and Backlashes	☐	fewer photos	☐
Know Your Protector	☐	more pages	☐
		larger type	☐
		more artwork	☐

I think the cover should be:

artwork ☐

photographs ☐

some of both ☐

The articles in *Wildlife in North Carolina*:

are too technical ☐

are too long ☐

are helpful in catching fish ☐

cover too much "national" issues ☐

should have more "national" issues ☐

I save my magazines ☐

I cut out some covers and save them ☐

DEPARTMENT OF LETTERS TO THE EDITORS, FIELD NOTES, AND ITEMS OF INTEREST

Conducted By Rod Amundson

Many of our leading manufacturers of sporting arms, ammunition and fishing tackle are also some of our staunchest conservationists. Hunting and fishing are their bread and butter, and without harvestable supplies of game and fish, these people would be out of a job. Yet, it goes beyond the dollars and cents with many of these folks; there often is an underlying sense of stewardship of our natural resources. These folks are true sportsmen.

It may be a bit unfair to single out one such individual, but certainly his many friends in and out of the business will agree he is an outstanding conservationist and a first class writer. He is John Madson with the Conservation Department of Olin Mathieson Chemical Corporation, the folks who make (among many other things) Winchester firearms. The following was written by John in the publication "News from Nilo," and we think that it makes interesting reading:

"The Big Cage"

Come summer, most of us want to bust out all over. We may even go a bit softheaded and envy the free, wild creatures.

Wild creatures, free? Don't you believe it.

All wildlife is imprisoned by natural law, confined to vast cages with walls of air pressure, moisture, temperature, oceans or mountains. The pronghorn antelope could never live in the Arctic, and the polar bear wasn't built for Florida. Each has a broad but definite *home range.*

Within home ranges, creatures are limited to definite *habitats.* The moose is generally confined to moist, low habitats. He and the mountain goat have the same northern range, but never share the same habitat.

And even within the habitat, a wild creature is herded by nature into a set of living conditions called the *ecological niche.* This is an oak beside a cornfield to a fox squirrel, or a fenceline by an alfalfa field to a woodchuck. It is the home environment of each animal.

But the animal is not always free to wander at will within this home niche. Most animals and birds establish territories, staking personal claims on a fragment of home range. These are set up for the individual, family or social group, and trespassers of the same species must beware. Jenny Wren stakes her claim on a clothesline post. Grizzly bears claw "sign trees," and rooster pheasants strut and crow. Men build fences and fly flags.

Territories are defended areas, and may be defended to the death. A bear might have a territory of twenty square miles but will not leave it without a battle, for bears in adjoining territories would fight him, and as a trespasser he would be at a psychological disadvantage. Your terrier can defend his own lawn against a much bigger dog. The entire town may be the terrier's home range. The city block is his habitat. The neighborhood is his ecological niche and the front lawn is his territory.

That lawn may also include the territories of a rabbit, a couple of robins and a human family, all co-existing in a sort of wheels-within-wheels setup. Each species knows that the others are not direct competitors, just as a grizzly bear has an understanding with grouse, mule deer and porcupines.

Wildlife is thus confined to a home range, to a habitat within that range, to an ecological niche within the habitat, to a territory within the niche, and even to rigid domestic routine within the territory.

So don't envy orioles and elk. Of all nature's children, you are freest to enjoy the summer.

Today's Sportsmen

DEAR SIRS: I am a teenager and like many of my buddies, enjoy hunting and fishing. About 30 of us have decided to get together and form a hunting and fishing, conservation club for teenagers. Our Principal and several of our teachers here at West Stanly High School have agreed to help us.

The purpose of our club would be to teach better methods of gun safety; learn more about our wildlife; and how to conserve our natural resources,

However, I'm afraid we are not too experienced in organizing a club of this type. We are, however, willing to work hard and do our best to learn more about those grand sports called hunting and fishing.

We also want to know how we can best conserve our fish and game for ourselves and the generations to come.

Our club is just in the beginning stage, and we are still just "babes in the woods" as far as organization, planning, funds, and projects are concerned. We would greatly appreciate any help you can give us on forming such a club. We would also be grateful for any information and materials you could send concerning hunting safety, conservation, game birds, especially quail, or any material concerning hunting and fishing.

Thank you for your valuable time and patience. JIMMY HONNEYCUTT, OAKBORO

Wildlife clubs can be extremely effective groups in furthering conservation of our wildlife resources and it is indeed gratifying to see young sportsmen taking this kind of interest. Our suggestion would to contact the North Carolina Wildlife Federation's Executive Director, Mr. Turner Battle, P. O. Box 948, Rocky Mount, N. C., for information concerning the formation of a club. Ed.

CORRECTION

The article on page 20 of the June issue was mistakenly attributed to Luther Partin. Herman Strickland, Wildlife Manager from Burgaw, actually wrote the acount. Our apologies to Mr. Strickland.

KNOW YOUR PROTECTOR

Lincoln Long

Lincoln Long, Graham County Wildlife Protector was born March 26, 1935 in Robbinsville, North Carolina. He graduated from Robbinsville High School.

Long served three years in the U. S. Army as Military Policeman during the Korean Conflict.

After completing the Pre-Service Training School for Wildlife Protectors at the Institute of Government in Chapel Hill, North Carolina, he was employed May 15, 1958 in the Division of Game. In August, 1959 he transferred to the Division of Protection. Long has attended four in-service Training Schools since his initial employment.

Long is married to Betty Carver. They have one son, David R. Long, and reside in Robbinsville, North Carolina.

DIVISION ENFORCEMENT RECORD FOR DECEMBER, 1964

HUNTING & FISHING	
Persons checked	10,780
Total prosecutions	700
Total convictions	675
Total cases not guilty	5
Total cases nol prossed	16
Total cases dismissed	4
Total fines collected	$5,375.30
Total costs collected	$4,751.45
BOATING	
Boats checked	48
Total prosecutions	11
Total convictions	10
Total cases not guilty	0
Total cases nol prossed	0
Total fines collected	$20.00
Total costs collected	$85.55

All fines and any arrest or witness fees are paid into the school funds of the counties in which the violations occurred, and no part of the fines or costs collected are paid to the North Carolina Wildlife Resources Commission or its personnel.

Help Conserve Game
REPORT VIOLATIONS

To report a violation of the game laws, call North Carolina Wildlife Resources Commission at one of the following locations:

Location	Area Code	Telephone
Edenton	919	482-2895
Washington	919	946-4744
Burgaw	919	259-4423
Rocky Mount	919	GI 2-4745
Fuquay-Varina	919	552-5028
Lake Waccamaw	919	646-5041
Burlington	919	228-8523
China Grove-Landis	704	857-9188
Pinebluff	919	281-3568
N. Wilkesboro	919	838-4618
Valdese	704	437-3215
Marion	704	697-7311
Waynesville	704	GL 6-9292
Raleigh	919	829-7191

A Commission radio operator will take your message and immediately relay the information by radio to the nearest wildlife protector. If a long distance call is necessary to reach one of these numbers, place the call collect, and inform the operator that you wish to report a game law violation. If you fail to reach the first number called, try the next nearest location. If you do not have these numbers available, call your Sheriff's or Police Department office.

Where'd They Go?

DEAR SIRS: In my home county of Bladen 50 years ago or more there were many blue birds a little larger than a sparrow. For the past many years I have seen none at all. Can you tell me if they are extinct or if they have moved to other locations? J. S. CAIN, LAURINBURG

Chances are that these were common bluebirds still abundant in many sections of the State. Perhaps their food supply became less abundant over the years, or it may have been misuse of insecticides. Many birds are cyclical in their populations. Ed.

• HAWKS

continued from page 22

of birds of prey continues to decline we might find ourselves in the midst of more rodents and insects than we care to deal with.

Let's look at two smaller situations. The effective coyote poisoning campaign in the west left the jack rabbit uncontrolled. And wasn't it Rachel Carson who theorized that the reduction in song bird populations caused by insecticides has aggravated the insect problem?

The "accidental" killing of thousands of these beneficial birds of prey annually could be eliminated or greatly reduced if all such birds were protected.

There can be little question that many hawks and owls are beneficial and that their presence brightens the outdoor scene for us.

Wouldn't it seem more logical to decide the fate of a particular bird, for cause or for what it does, for example a chicken thief on a particular farm, than to doom all birds of prey because of what they are?

Wildlife PRODUCES for NORTH CAROLINA

• SKIPPER

continued from page 18

many boatmen think nothing of leaving their boats in isolated areas secured by a single mooring line or parked aboard their trailers ready to go.

If your motor is stolen, it is probably gone for good! The recovery rate is less than one percent, says Evinrude; one good argument for adequate insurance coverage. It's a sign that boatmen don't take the time to properly register their equipment. Many can't identify their motors even when they see them again.

The low recovery rate also indicates that there is a market for the "hot" motor, and we're not talking about speed. There's a double danger involved for the customer looking for his "quickie deal." A New York man purchased an engine that was later identified as stolen property. The insurance company that paid the original owner for his loss had a legal right to reclaim the engine. They did just that. That left our New York friend without his money or the motor.

Evinrude offers the following suggestions to protect your boat and motor against theft:

- Record all serial numbers on the boat and motor and register them with the manufacturer. Keep a copy of these numbers for yourself.
- Use a chain and lock to secure your motor to your boat.
- When trailering your boat don't leave it unattended. At night, wrap the trailer safety chain around a tree or post and secure it with a lock. Don't think your rig is safe parked in your garage. Thieves have been known to pull right into driveways, hook-up and pull away.
- If your motor has electric starting, never leave the key in the ignition. Protect manual starting motors by removing a spark plug.
- Report all thefts immediately to local authorities, your marine dealer and the manufacturer.

• POLLUTION: continued from page 9

doing the best job on water pollution are doing an inadequate job," Assistant Secretary of Health, Education and Welfare Quigley told a Congressional committee. Last year, for the first time, we started gaining on municipal pollution, although we have a backlog of 5,831 projects which will cost $2.2 billion for treatment plants and sewers. Industrial groups have opposed the federal program of grants to cities on the grounds that pollution is a local and state problem. The reason for this attitude, it is suspected, is that once cities clean up pollution, the finger of guilt will inevitably point to the other polluters—mostly industrial plants. Organic wastes from industrial sources are *double* that from cities.

Water pollution is not an impossible problem. We know that the Ruhr River, which drains the heavily industrialized, heavily populated Ruhr Valley of western Germany, is managed so well it is still safe for boating and swimming. One possible reason—there's a tax on industrial wastes.

We have three big needs in the pollution fight: More money invested in city and industrial water treatment plants. More research to develop more efficient techniques of water treatment. And better enforcement of strong pollution laws—federal, state and local.

How clean and pure we attempt to maintain our streams is a matter of economics and realities, and of values, both tangible and intangible. But of these things we can be certain: Pollution *must* be kept below the levels of significant personal health damage. Pollution must not destroy recreational and wildlife values. Users of water do not have an inherent right to pollute—they must return it as nearly clean as possible.

What can *you* do to help correct this shameful situation?

First, investigate personally to learn how community and industrial wastes are handled in your community.

Second, let elected officials at local, state and federal levels know you want strong anti-pollution laws, and want them enforced.

Third, through your conservation club, garden group, women's club or civic group, join in concerted actions to improve controls.

Only through a wave of expressed public disgust can we clean up our polluted waters and insure a safe, continuing supply for the many jobs water does for us.

Reprinted from National Wildlife Volume 1, Number 6

The new officers of the Wildlife Resources Commission, elected at the June meeting are (left to right): Oscar Ledford, Secretary; Hugh Chatham, Chairman; and Orville L. Woodhouse, Vice Chairman.

• ACCESS AREAS

continued from page 21

28. **HIGH ROCK LAKE** (Dutch Second Creek) Rowan County. Eight miles southwest of Salisbury at Bringle's Ferry Road Bridge (Secondary Road No. 1002).
29. **HIGH ROCK LAKE** (Southmont) Davidson County. Off Secondary Road No. 1100, one mile south of Southmont.
30. **HIWASSEE RESERVOIR** (Grape Creek) Cherokee County. Five miles northwest of Murphy on Joe Brown Highway (Secondary Road No. 1326).
31. **HIWASSEE RESERVOIR** (Hanging Dog) Cherokee County. From Square in Murphy approximately 3.5 miles northwest to area on left.
32. **INLAND WATERWAY** (Coinjock) Currituck County. One mile east of Coinjock on Secondary Road No. 1142.
33. **JAMES LAKE** (Canal Bridge) Burke County. Two miles northwest of Bridgewater on N. C. Highway No. 126.
34. **JAMES LAKE** (Linville Arm) Burke County. One mile east of Linville River Bridge on N. C. Highway No. 126.
35. **JAMES LAKE** (North Fork) McDowell County. One-half mile north of U. S. Highway No. 221-70 intersection west of Marion via Secondary Roads Nos. 1501 and 1552.
36. **JAMES LAKE** (Wildlife Club) McDowell County. One mile north of Nebo off N. C. Highway No. 126 on Secondary Road No. 1548.
37. **KERR RESERVOIR** (Nutbush Creek) Vance County. North of Henderson between Satterwhite Point Road (Secondary Road No. 1319) and N. C. Highway No. 39 off Secondary Road No. 1308.
38. **KITTY HAWK BAY** (Avalon Beach) Dare County. At Avalon Beach, one-half mile west of U. S. Highway No. 158.
39. **LITTLE RIVER** (Hall's Creek) Pasquotank County. Between Nixonton and U. S. Highway No. 17 on Secondary Road No. 1140.
40. **LOOKOUT SHOALS LAKE** Catawba County. Near Lookout Dam, six miles northeast of Conover on Secondary Road No. 1006 off N. C. Highway No. 16.
41. **LUMBER RIVER** (Lumberton West) Robeson County. Interstate 95 south, left .4 miles on NC 72.
42. **MEHERRIN RIVER** (Murfreesboro) Hertford County. North side of U. S. Highway No. 258 Bridge at Murfreesboro.
43. **MOUNTAIN ISLAND LAKE** (Davidson Creek) Mecklenburg County. Northwest of Charlotte and six miles east of U. S. Highway No. 21.
44. **MOUNTAIN ISLAND LAKE** (Lucia) Gaston County. One and one-half miles east of Lucia via N. C. Highway No. 16 and Secondary Road No. 1909.
45. **MOUNTAIN ISLAND LAKE** (16 Bridge) Gaston County. Twelve miles northwest of Charlotte on N. C. Highway No. 16.
46. **NANTAHALA RESERVOIR** (Choga Creek) Macon County. East of Andrews via Secondary Road No. 1505 and U. S. Forest Service Road No. 30.
47. **NANTAHALA RESERVOIR** (Rocky Branch) Macon County. Nineteen miles west of Franklin via U. S. Highway No. 64 and Secondary Road No. 1310.
48. **NEUSE RIVER** (Bridgeton) Craven County. One mile north of Bridgeton just off U. S. Highway No. 17.
49. **NEUSE RIVER** (Goldsboro) Wayne County. Adjacent to U. S. Highway No. 117 south of Goldsboro.
50. **NEUSE RIVER** (Richardson's Bridge) Johnston County. Off Secondary Road No. 1201 approximately nine miles southeast of Smithfield.
51. **NORTHEAST CAPE FEAR RIVER** (Holly Shelter) Pender County. At Holly Shelter Refuge, six miles south of N. C. Highway No. 53 via Secondary Roads Nos. 1523, 1522, and 1520.
52. **NORTHEAST CAPE FEAR RIVER** (Kenansville) Duplin County. Between Kenansville and Beulahville on N. C. Highway No. 24.
53. **PAMLICO SOUND** (Engelhard) Hyde County. 1 mile north of Engelhard, east of NC 264.
54. **PASQUOTANK RIVER** (Elizabeth City) Camden County. Adjacent to U. S. Highway No. 158 northeast of Elizabeth City.
55. **PEE DEE RIVER** (109 Bridge) Anson County. Eight miles north of Wadesboro on N. C. Highway No. 109.
56. **RHODHISS LAKE** (Castle Bridge) Caldwell County. North of Connelly Springs at Castle Bridge via Secondary Road No. 1001.
57. **RHODHISS LAKE** (Dry Pond) Caldwell County. One mile southwest of Granite Falls.
58. **RHODHISS LAKE** (John's River) Burke County. Two miles east of Morganton.
59. **RIM LAKE** Cumberland County. Off U. S. Highway No. 401 nine miles west of Fayetteville.
60. **ROANOKE RAPIDS RESERVOIR** (Thelma) Halifax County. On U. S. Highway No. 301 at Weldon.
61. **ROANOKE RIVER** (Hamilton) Martin County. Hamilton city limits east of NC 125.
62. **ROANOKE RIVER** (Weldon) Halifax County. On Highway No. 301 at Weldon.
63. **ROANOKE RIVER** Northampton County. From Roanoke Rapids NC 48 north to bridge over Roanoke River.
64. **SANTEETLAH LAKE** (Ranger Station) Graham County. Five miles west of Robbinsville on Secondary Road No. 1127.
65. **SCUPPERNONG RIVER** (Columbia) Tyrrell County. One mile west of Columbia off U. S. Highway No. 64.
66. **SHELTER CREEK** Pender County. Nine miles east of Burgaw on N. C. Highway No. 53.
67. **SOUTH RIVER** (Sloan's Bridge) Bladen County. Two miles southwest of Garland on U. S. Highway No. 701.
68. **SOUTH RIVER** (SR No. 1007 Bridge) Bladen County. 5 miles south Intersection NC 41-210, 1 mile east on Secondary Road No. 1007.
69. **SOUTH YADKIN RIVER** (Cooleemee) Davie County. Two miles northwest of Cooleemee on N. C. Highway No. 901.
70. **TAR RIVER** (Bell's Bridge) Edgecombe County. One mile north of Tarboro on U. S. Highway No. 44 at Bell's Bridge.
71. **TAR RIVER** (Falkland) Pitt County. N. C. Highway No. 43 east, eight and one-half miles from Greenville to SR 1400. Approximately .6 miles on SR 1400 to area.
72. **TAR RIVER** (Greenville) Pitt County. Three miles northwest of Greenville via U. S. Highway No. 13 and Secondary Roads Nos. 1001 and 1401.
73. **TAR RIVER** (Old Sparta) Edgecombe County. On N. C. Highway No. 42 at Old Sparta.
74. **TAR RIVER** (Rocky Mount) Edgecombe County. Adjacent to Business Highway No. 301.
75. **TILLERY LAKE** (Lilly Bridge) Montgomery County. South of N. C. Highway Nos. 27 and 73.
76. **TILLERY LAKE** (Swift Island) Montgomery County. Five miles southeast of Albemarle off N. C. Highway No. 27-73.
77. **TUCKERTOWN RESERVOIR** (Flat Creek) Rowan County. From N. C. Highway No. 49, .6 mile west of Yadkin River, SR 1004 west 1.7 miles to SR 2152, north 3.5 miles to area.
78. **WACCAMAW LAKE** Columbus County. On lake shore road west of N. C. Highway No. 214.
79. **WHITE OAK RIVER** (Haywood's Landing) Jones County. Five miles southeast of Maysville, south of N. C. Highway No. 58.

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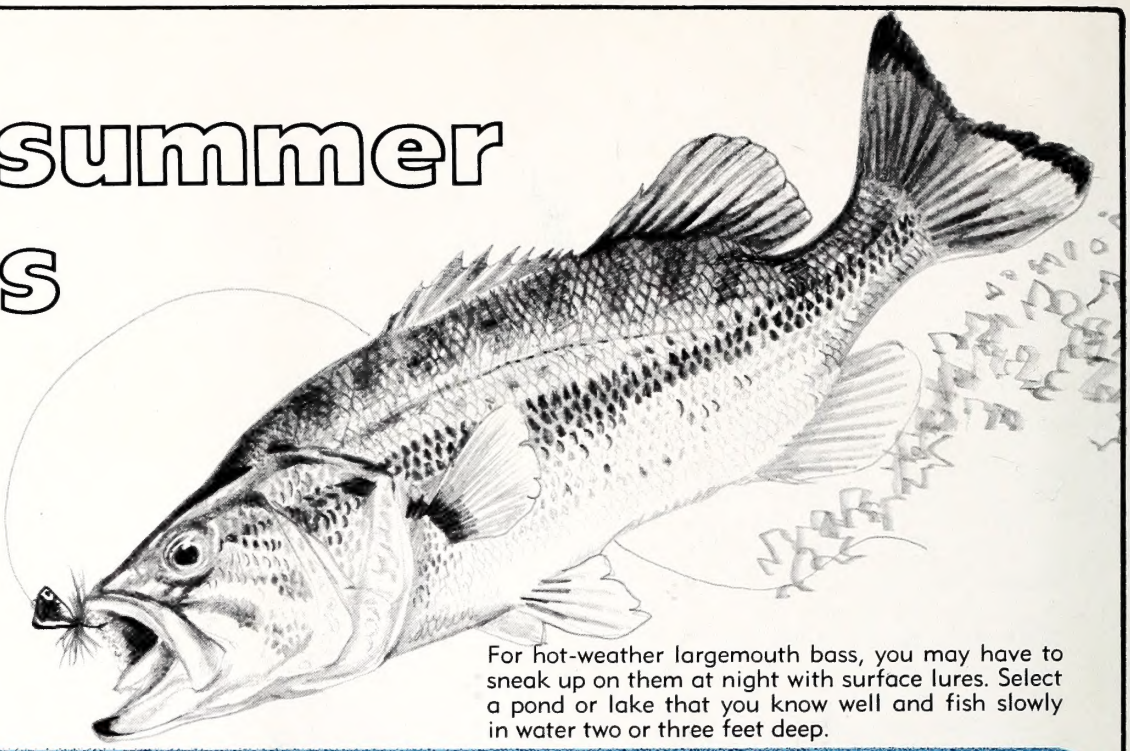
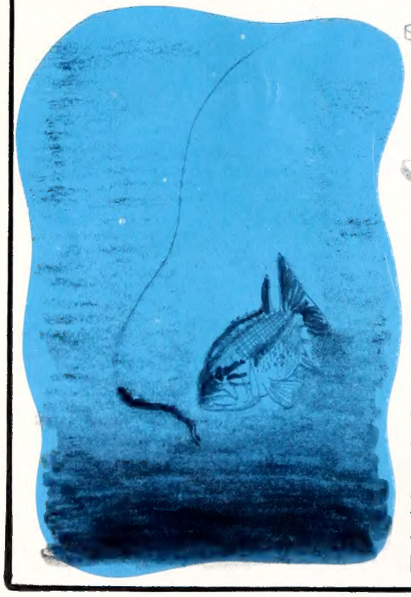
Midsummer Bass

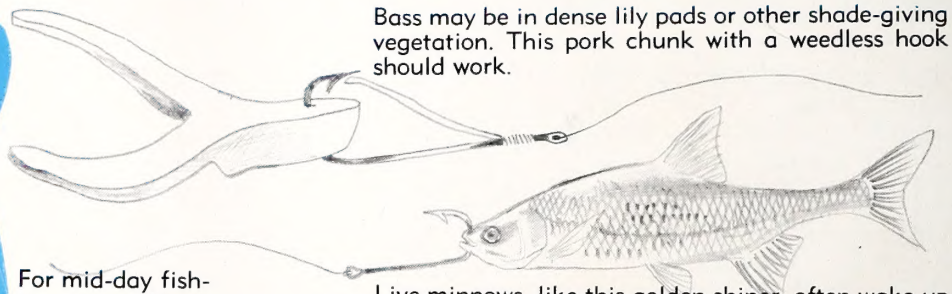


For hot-weather largemouth bass, you may have to sneak up on them at night with surface lures. Select a pond or lake that you know well and fish slowly in water two or three feet deep.



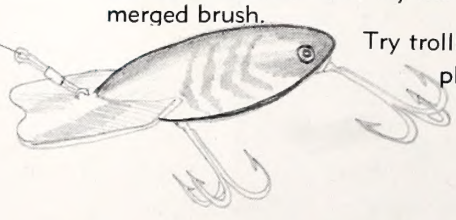
For mid-day fishing, try a black plastic worm fished very slowly near the bottom. Check the depth with a heavy sinker and some line to find the deepest holes where water is a bit cooler.

Bass may be in dense lily pads or other shade-giving vegetation. This pork chunk with a weedless hook should work.



Live minnows, like this golden shiner, often wake up the warm-weather fish. Try them near areas of submerged brush.

Try trolling with deep-running plugs when all else fails.



D. RAVER

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Wildlife IN NORTH CAROLINA

SEPTEMBER, 1965

JOEL ARRINGTON

This young opossum seems a bit uneasy in the bright daylight, and is very likely planning his next move toward the nearby woods. Opossums are creatures of the night and are not frequently seen after dawn. They are members of one of the oldest groups of mammals on earth today, and regardless of how wildlife habitat is damaged or destroyed, the opossum seems to survive.

STATE OF NORTH CAROLINA

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GOVERNOR

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WILDLIFE IN NORTH CAROLINA recognizes the need for close cooperation between State and Federal conservation agencies and the people who hunt and fish—to bring about a restoration of our renewable resources. The Editor gratefully receives for publication news items, articles, and photographs dealing with the North Carolina out-of-doors, but reserves the right to reject materials submitted. Full credit is given for all materials published.

* * *

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Wildlife IN NORTH CAROLINA

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The sora, with its short, yellow bill and gray-brown breast feathers, picks its way through a watery feeding ground. This rail is less than half the size of the king rail, and considerably smaller than the clapper. Yet it is a popular game bird of the coastal marshes where it falls into the general category of "marsh hen." The sora is migratory and is not restricted to the coast during these periods. Ektachrome transparency by Jack Dermid.

Wildlife HUNTING FISHING BOATING Legislation, 1965

by Rod Amundson

BETWEEN convention and adjournment, the 1965 General Assembly acted, in one way or another, on 1,804 pieces of legislation. Of these, 1,209 became state law and 93 were resolutions. Out of the 1,209 laws enacted only 27 had a direct bearing on wildlife resources and boating. Following is a compendium of these laws and a brief description of how each will affect you as a hunter, fisherman, or boat operator. They are presented in the order in which they were introduced. Some were introduced in the House of Representatives, some in the Senate, while others were introduced simultaneously as companion bills. No effort is made here to evaluate these bills.

Senate Bills

S. B. 151 provides that where a county is bounded by a body of water, residents of such county, using natural bait, may fish without a license from the banks of or on the surface of boundary waters. It also provides that where a municipality is bounded by a stream, residents of the county in which the municipality is located may fish without a license on the banks of the boundary stream directly opposite the municipality, even though such banks are in another county but provided that natural bait is used.

S.B. 160 adds Avery, Burke, Caldwell, Watauga, McDowell, and Mitchell counties to those in which European wild boar may be hunted subject to the following conditions:

(1) Open season shall be the same as the season prescribed for hunting bear in said counties;

(2) Bag limits shall be one per day, one in possession, and two per season;

(3) Boar may be taken only in the daytime, between sunrise and sunset;

(4) Boar may be taken only by means of rifles larger than .22 calibre or shotguns when loaded with buckshot or rifled slugs;

(5) No trapping or snaring shall be allowed; and

(6) The use of dogs shall be allowed.

S.B. 166 gives the Wildlife Resources Commission authority to publish fishing regulations in a newspaper "published in and having general circulation throughout the State" only one time. This makes the publication of these regulations correspond with the publication of hunting regulations. In the past publication of the fishing regulations was required three times. (Note: This does not affect the normal distribution of fishing or hunting regulations published in separ-

arheel outdoorsmen—fishermen, unters, and boaters—should be terested in what the 1965 Gen- al Assembly enacted into law fecting their sports. Here, in ncise language, are the pieces of gislation that you will want to now more about.

ate booklets and distributed by license dealers).

S.B. 253 gives the U. S. Government and the Eastern Band of the Cherokee Indians responsibility for trout management on Indian lands in Jackson and Swain counties, and provides that all trout transported from the Cherokee Reservation shall be accompanied by an official Cherokee Indian Reservation fishing permit, bearing on its face the official wildlife seal of the Eastern Band of the Cherokee Nation, the number of the permittee's North Carolina fishing license, the name of the licensee, the number of trout taken, and the date of such taking.

S.B. 315 Authorizes camps for boys or girls to hold regattas or boat races without prior authorization by the Wildlife Resources Commission, provided that no motor power is used in connection with boats involved in such regattas or races.

S.B. 415 provides for minimum penalties for trespassing for purposes of hunting, fishing or trapping. Upon conviction of such violation, the minimum fine for daytime trespass is $15.00, nighttime $30.00. No arrest for such trespass may be made without the landowner's consent.

S.B. 475 makes it unlawful to take alligators or their eggs at any time except that landowners may take alligators in defense of their property.

S.B. 562 allows the use of cutout devices on motorboats when such boats are operated at reduced throttle or are at least one-half mile from the nearest residence or other watercraft. Mecklenburg, Gaston, Catawba, Iredell, Lincoln, Caldwell, Halifax, Warren, Columbus, Bladen, Brunswick, Edgecombe, Martin, and Perquimans counties are exempted from this act. This means that in these latter counties no muffler cutout devices may be used on motorboats except during authorized boat races or race speed trials.

House Bills

H.B. 123 exempts Jones County from the prohibition against Sunday net fishing. (Note: see H.B. 560)

H.B. 231 allows the taking of bears inflicting or attempting to inflict damage in Washington County by any person, on the spot or in pursuit. Such bears become the property of persons taking them. Local wildlife protectors, however, must be notified of such kills.

H.B. 233 exempts Pitt County from the prohibition against Sunday net fishing.

H.B. 278 requires boats having toilets to be provided with devices designed to prevent the introduction of raw sewage into the inland lake waters of the state, effective January 1, 1966. This bill also prohibits registration of such boats until approved devices are properly installed. This latter provision becomes effective January 1, 1969. (See "Skipper")

H.B. 315 prohibits the taking of game from public highways by use of firearms in Northampton County.

H.B. 372 provides fines for violations of boating regulations established by the Wildlife Resources Commission.

H.B. 374 adopts a uniform waterway marking system for the waters of the state. This will do for waterways what the highway marking system, nationwide, does for highways and streets.

H.B. 375 amends and clarifies existing statutes increasing the penalty for taking wild turkeys illegally to $100.00.

H.B. 397 exempts Duplin, Wayne, and Pender counties from the prohibition against Sunday net fishing.

H.B. 491 repeals Chapter 827 of the Session Laws of 1963 prohibiting the taking of foxes in a certain section of Perquimans County between February 15 and October 1.

H.B. 525 allows boats to be operated on state-owned waters without payment of any fee other than boat registration as required by law. This bill becomes effective January 1, 1966.

H.B. 535 declares wild or feral hogs as game animals and prohibits taking them until October 15, 1967. Effective October 15, 1967, an annual open season is established from October 15 to January 1, with a daily bag limit of one hog, two in possession and two per season. This applies only to Jackson, Macon, and Clay counties.

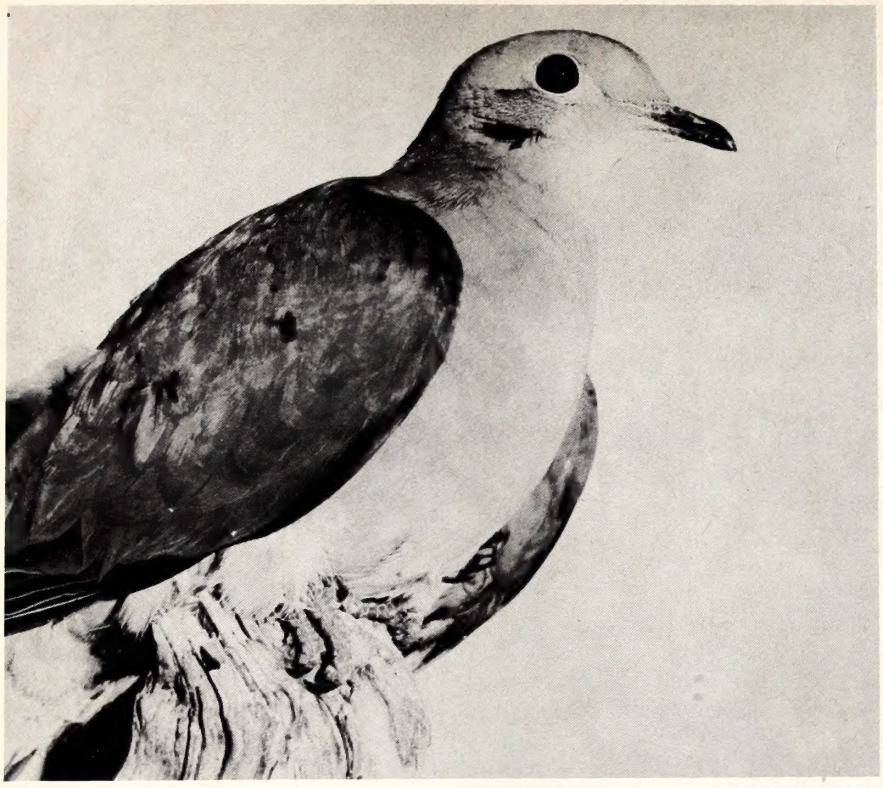
H.B. 540 makes it unlawful to hunt or take foxes in any manner in Duplin County from March 16 to August 1, but provides that foxes may be taken during the period extending from August 2 to March 15 each year with dogs and guns when the season is open on other upland game. This bill becomes effective January 1, 1966.

H.B. 559 re-establishes the Wildlife Resources Commission as a nine-member board by eliminating two at-large members.

H.B. 560 rewrites and clarifies the laws relating to the conservation of marine, estuarine and wildlife resources. It establishes lines of jurisdiction between the Wildlife Resources Commission and the Department of Conservation and Development, places salt water sport fishing within control of a Division of Coastal Fisheries, and serves as a groundwork for further conservation of North Carolina's total fishery resources. This bill invalidates H.B. 123, 233, and 397 after January 1, 1965.

H.B. 661 makes it unlawful to kill fox in Yancey County.

H.B. 680 prescribes that "posted" notices prohibiting hunting or trapping be of not less than 10 inches by 12 inches in size, must be conspicuously placed not less than 500 yards apart, one on each side and each corner of posted property. Posters prohibiting fishing of any kind may be placed along shorelines at intervals of not more than 300 yards. ◆



F. EUGENE HESTER

Tips for Better Dove Hunting

by S. Thad Cherry
Wildlife Biologist

The mourning dove has been a favorite game bird of Tarheel gunners for many years. Although hunting pressure has been heavy, we still have good dove populations.

IT'S downright embarrassing to always be the last one in your dove hunting group to get your bag limit! It's strange how some of the fellows always happen to choose stands where the doves dive-bomb them, while you get only an occasional long shot. You can't always blame it on luck. Maybe you had the wrong size shot or the wrong choke on your barrel. But this is little consolation. It doesn't help a bit either when your wife snickers as you pull out only two or three birds from your bag when you get home.

Like a lot of other things, your dove hunting will improve with experience. As you gain experience, you will profit from your mistakes, and you will begin to formulate your own set of dove hunting "do's and don'ts." Doves tend to be rather predictable, and there are certain pointers which if properly followed can almost guarantee success.

Of course, the opening day of the dove hunting season is usually the best hunting day of the season. About 80 percent of the dove population was hatched during the spring and summer immediately preceding the opening day. These doves are young, inexperienced, and are hard to drive from a good shooting field. So the first few days of the hunting season, particularly the first day, provides the best hunting. The lucky and smarter doves survive the first day, and they become more elusive as the season progresses.

Perhaps the most important prerequisite for a successful dove hunt is the proper choice of shooting field. The ideal dove hunting field would probably be an eight or ten acre freshly cut silage cornfield on a hill, crossed by a powerline, surrounded by open pine woods, with a pond, lake, or river nearby. At any rate, a good shooting field must abound with a choice dove food, and must be relatively clean cut.

This hunter relies on a camouflage suit which blends well with the brushy woods.

LUTHER PARTIN

Doves just don't like to feed in fields with a tall growth of vegetation.

Some of the best early season dove hunting is over a mixture of soybeans and browntop millet, which has been mowed and raked for hay. This leaves an abundance of millet seed lying on the clean ground. Of course, freshly cut silage cornfields are the old standby, as they usually have an abundance of corn shattered on the ground. Fields of millet, corn, or milo are almost unequalled as dove shooting fields.

Once you decide which is the best field to hunt, another important decision must be made. Your choice of a stand within the shooting field will to a great extent determine your success as compared to that of your companions. You want to be the one that has to duck to avoid being hit by flying doves. There are a number of qualifications which will eliminate all but a few of the many possible stands around a field. First of all, head for the shady side of the field, so that you will be in the shade, with the sun at your back. Here you will be cooler, and at the same time, less visible to the doves. Also, after an hour or so of dove hunting eye fatigue can be a very important factor influencing your shooting accuracy. With the sun at your back, your target is clearly and distinctly illuminated, and at the same time, the dove is hampered by having the sun in his eyes if he is flying toward you.

As you head for the shady side of the field, if there is any tree or other tall object which stands higher than the rest, station yourself near this. Doves seem to have a sometimes costly habit of flying near or over tall objects.

It is not at all necessary to build a blind, but if you choose a stand near a fence post, bush, or clump of weeds, you will have a better chance. Camouflage suits are not necessary either, but it would be best to wear drab colored clothes rather than a white shirt. Doves are frightened more by movement than by color or object identification.

Early season dove hunters can do well with an improved cylinder or modified choke barrel. As a rule, the doves fly relatively close, and it is easy to miss with a very tight pattern. Many successful dove hunters prefer high-base shells with number 7½ shot, but for early season shooting, low-base number eights are usually sufficient.

As was stated, the early season doves are young, inexperienced, and are hard to drive from a good shooting field. But with the coming of the second half of the split dove season, certain things have changed. By December, the young doves have attained adult plumage, and those that have survived this long are smart birds. The second season doves are much harder to fool, and you can be a little more proud of a successful hunt.

In the second season, you are likely to find doves in any place where food is abundant—much the same as the early season. Often, as your hunting party enters the field, the doves will leave. But if the food is abundant, and if the doves have not already fed heavily, they will return.

Now, camouflage can be a very important aid. These doves are smart, and the sight of a man's face affects them much the same as it would a duck. Camouflage suits and face nets can be very helpful.

In second season dove hunting, the gun choice plays a more important part. Most successful dove hunters prefer a full choke, or at least a modified choke. Some are quite successful with duck guns—30-inch, full choke barrels. Those high-base shells may be needed now, with either number six or 7½ shot.

In addition to the above, there are a number of general rules or tips which can add to the enjoyment and success of a dove hunt.

When you want to go dove hunting, get with a group of safe hunters. The old adage "the more, the merrier" has a special application to dove hunting. A large group can surround a field,

Decoys may help turn birds. Don't give your position away by sudden movement.
JACK DERMID

Hunter checks a dove for estimated age.

and keep the doves flying much better than one or two individuals.

Relax, take it easy. After all, you are out there for fun. Your shooting percentage will be much higher if you don't get upset every time you miss a shot.

Be absolutely motionless until you are ready to shoot. When a dove is flying toward you, don't start shuffling around and waving your gun, getting ready. Follow the dove with your eyes, not by moving your whole head. Go into action only when the dove is within shooting range.

Pick a clean "drop zone" if possible—you'll spend less time looking for dead birds. If the doves are flying well, don't shoot where they will fall in a rough or inaccessible area. Wait for a good shot over the clean field.

Be content with singles—trying for doubles means many lost birds. When you shoot at the second bird, you often don't see where the first one fell. Shoot a bird and go get him then—you'll get your limit quicker.

Mark your birds down. When the dove hits the ground, don't take your eyes off that spot until you get there. If you don't see the dove, put down your hat or handkerchief and then begin a methodical search around it.

Half or more of being a successful dove hunter is knowing how to go about it. Of course, once you have the knack of choosing a stand where the doves fly all over you, then you must be able to hit one occasionally. This, I'm afraid, must come with experience. In time you will learn to swing the barrel in behind the dove, up to him, and to squeeze off the shot when you have the proper lead. You will find that doves flying either toward you, or away from you present a special problem. When a dove is flying toward you, experience will teach you to swing in from under the bird, and to squeeze off the shot just as the barrel hides the bird at about the eleven o'clock position.

But that's enough of that—it's more fun to learn by yourself. Besides, you don't want to get your limit without getting in a lot of shooting. But it is a lot of fun to "limit out" and sit with your less fortunate buddies and razz them when they miss. They will say you were just lucky—but you'll know there is a little more to it than that! ⬍⬍

One bird for four or five shells is often par for the course with fast-flying doves.

JACK DERMID

If you've been shooting more and hitting less recently, maybe it's time to relax.

NORTH CAROLINA WILDLIFE

RESOURCE-O-GRAM

A ROUNDUP OF THE LATEST WILDLIFE NEWS

Dove, Marsh Hen Shooting Begins in September

12:00 o'clock noon on September 11 marks the opening of the 1965-1966 dove season in North Carolina, with the first segment of the split season running through October 16. Shooting hours will be from noon to sunset with 12 birds allowed daily, 24 in possession. Field observations indicate at least as many birds available this year as last, perhaps more. This indicates a possible kill of around 3,000,000 birds during the season.

Second segment of the dove season opens December 11 and runs through January 13 with the same shooting hours and bag limits.

The marsh hen season (rails, sora, gallinules) gets under way September 20 with the same bag limits as last year,—15 birds daily, of single or combination of species, and 30 in possession. Shooting hours again will be from sunrise to sunset. See "Crackshots" in this issue for dates and times of tides best for marsh hen shooting.

Public Drawings for Bear, Bear-Boar, Waterfowl Hunts

Drawings for party hunts for bear and boar on Western Wildlife Management areas will be held at 9:00 a.m. Wednesday, September 15 in the Courthouse at Waynesville. Party hunt applications containing not more than 25 names must be received in the Wildlife Commission's Raleigh office by September 1 in order to be processed for the drawings.

Waterfowl hunters wanting preferred dates for shooting blinds in the Mattamuskeet National Waterfowl Refuge must submit advance application forms to the Wildlife Commission's office at New Holland, N. C., prior to 6:00 p.m. on September 21. Application forms will be available from local wildlife protectors and from the Raleigh or New Holland offices of the Commission as soon as waterfowl hunting dates are announced by the U. S. Fish and Wildlife Service. A public drawing to determine successful applicants is scheduled for 9:00 a.m. at the courthouse in Swanquarter Thursday, September 23.

Hunting Accidents 1965

by John Parker

HUNTING accidents, both fatal and nonfatal, increased during the 1964-65 hunting season. A study completed in March revealed that the total number of accidents was up 24 percent compared to the firearms hunting accidents of the 1963-64 hunting season.

A 24 percent increase is certainly significant, regardless of what one is dealing with, and especially when we are discussing human lives. However, there is a bright side to the apparent increase in hunting accidents. This bright side is, now and has been in years past, that we are, dealing, thankfully, with relatively small numbers. This is in direct contrast to automobile accidents or to accidents in the home. Although the total number of accidents is up 24 percent, the rate is up only 14 percent. But any increase in the efficiency of accident reporting, which is believed to be the case, would tend to indicate a rate increase and this may distort the true picture.

The total number of hunting accidents involving firearms last season, according to reports filed with the Wildlife Resources Commission, was 72. The total number of hunting accidents for the 1963-64 season was 58. Nineteen of the 72 accidents were fatal and eight of the fatalities involved teenagers. The remaining 53 accidents were nonfatal but involved injuries ranging from one or two pellets embedded in the skin to a resulting amputation or the loss of an eye.

Dozens upon dozens of comparisons can be made with the information found in the hunting accidents reports, but let us consider the more significant figures. First, we find that 21 (29 percent) of the total were self-inflicted. These should not be confused, of course, with attempted suicide. Fifty percent of the self-inflicted injuries involved persons in their teens.

The 51 accidents that were not self-inflicted involved two people. That is there was a shooter and a victim. The study reveals facts on both. For example, the shooters ranged in age from 10 to 82 years old, with 44 percent of them being 19 years old or under and another 25 percent being in their twenties. But only one person involved was under 12 years of age. They claimed experience in the field of hunting from not any to 60 years, but over one-third of them claimed less than five years. On the other hand, the victim's age range was from 12 to 77 with one-third of them being 19 years old or under and another 24 percent in their twenties. Their experience in the field was reported at from not any to 40 years, but about one-third of them claimed five years or less.

Although national statistics show that more and more women are hunting, we should point out that with one exception those involved in the accident picture were male. The one woman involved was a bystander and she was injured slightly.

For the most part, the accidents discussed herein were caused by acts of carelessness or a lack of knowhow, but it is good to report that the records confirm not a single case where intoxicants were involved.

The where and when of the past season's accident picture is basically as follows. Forty-five of the state's 100 counties were reported as having within their boundaries one or more accidents. Several of the counties had more than two accidents each.

One county, namely Wake, had five (26 percent) of the total number of fatalities. This is pointed out to emphasize only the lack of pattern concerning hunting accidents, as last year Wake County had a clean slate.

That 26 percent of the fatal accidents occurred in one county is most unusual since they are normally evenly distributed over the state. This year those counties along the extreme western edge of the state, the extreme northeastern counties and the 10-county group centered around Alamance County were the only blocks of accident-free counties.

Marksmen are not always safe hunters. But supervised instruction should develop more "safe thinking" in youngsters.

That's not you, is it ? We won't ask how many times you did this last season, but unless you unloaded your gun and placed it on the ground before crossing the fence, you're lucky that you didn't end up as a statistic. Watch that fence, too!

As for the time of year, most of the accidents occurred in November. Five of November's 29 accidents occurred on Thanksgiving Day. A further breakdown by month shows that September had 5, October 13, December 16, January 8, and February 1. Sixteen (21 percent) of the total number of accidents occurred on Saturday. This seems to indicate that there is plenty of hunting throughout the week.

Most accidents, 65 percent, occurred in late afternoon, with the two-hour period from three to five o'clock being the time when 23 of the 72 accidents happened.

Contrary to much popular belief, the shotgun is more dangerous than the rifle, or at least that is what the study indicates. In 62 (85 percent) of the accidents, the gun involved was a shotgun. Nine rifles and two handgun accidents make up the remainder. Over half of the time the distance was very close, that is from 0 to 10 yards.

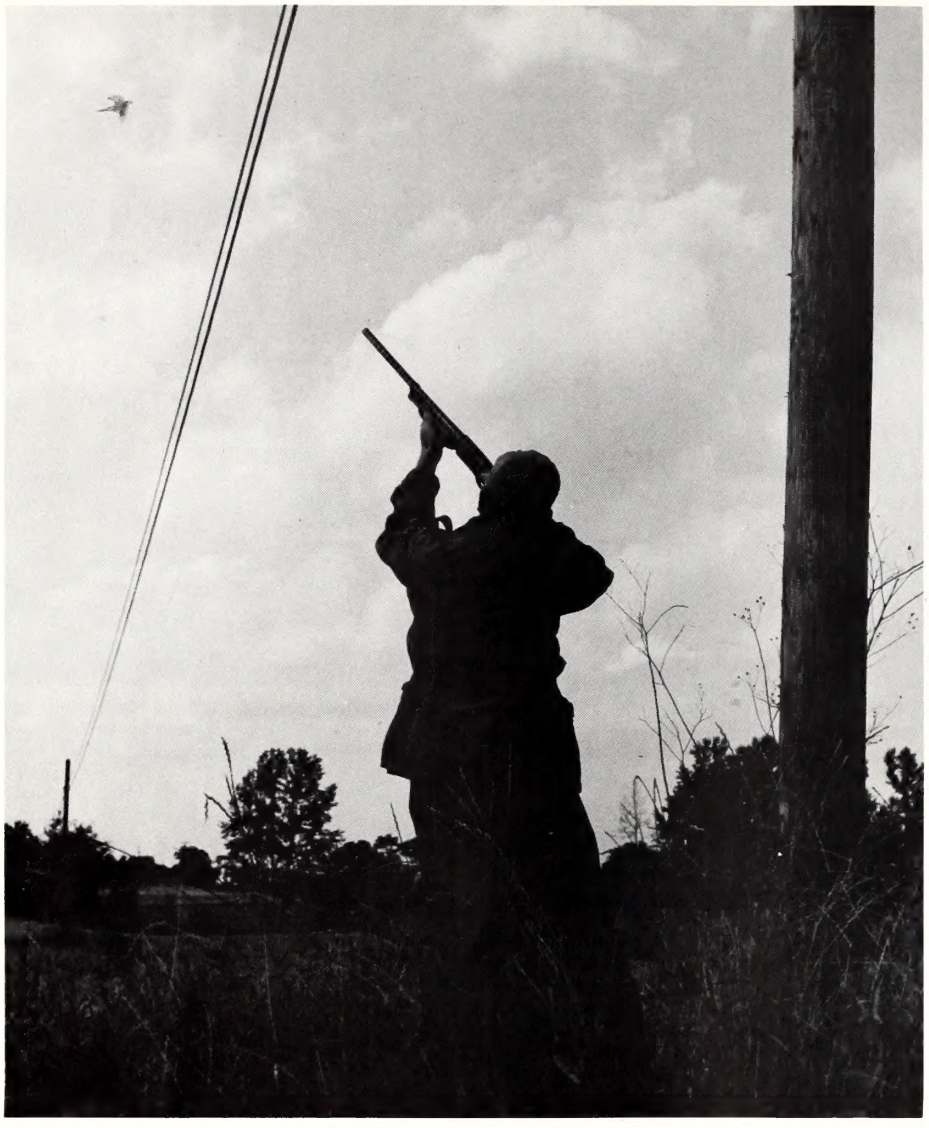
What was being hunted at the time of the accident? Small game is the normal quarry and the picture was no different this past season. Twenty-four were reported as hunting squirrels, 13 rabbits, 7 quail, 4 doves, 1 goose, 2 ducks, and 8 in the big game or deer category. In some cases, the game being hunted was not reported.

Finally we find that 12 of the accidents were caused in part by the victim being out of sight of the shooter; 10 victims were hit when the shooter was swinging on game; in 9 cases the shooter stumbled and fell; in 5 cases the trigger was caught on some object; 2 happened when a loaded gun was removed from a vehicle; 4 occurred when crossing a fence or other obstacle with a loaded gun; 5 claimed defective guns; 4 victims moved into the line of fire; and 5 were "mistaken for game." Other miscellaneous entries on the accident reports included everything from a gun being discharged by a frolicking dog to the victim resting the gun on his toe.

After 5½ months of hunting by over 400,000 hunters, the above story wound to an end. In some cases, the victim was as much at fault as the shooter. Such criticism may seem somewhat harsh, but safety is everyone's business.

If there is an answer to preventing or at least keeping in check the hunting accidents, it must include training, at an early age and under proper supervision, those youngsters who choose hunting as a way of life. For as the accident study revealed, none of those involved was reported as having had any prior training in the safe handling of guns. One thing is for sure, completely forgetting the guns and the safety slogans during the off season will not help the situation. If that happened at your home this past summer, there is still time before this season gets into full swing for some preventive medicine. One cannot be expected to learn all about safe gun handling in a week or a month; but even a few hours of serious thought or discussion on the subject may be all that is needed to prevent that one careless act.

Why not hold a home study course in the days ahead? Do this especially if there is a young hunter in the home. A heart to heart talk, a review of the basic safety rules, a few days afield with an unloaded gun followed by some target practice is just one way of going about it. Write the Wildlife Commission today for free literature on the subject or for information on how to become a certified Hunter Safety Instructor. ◆



YOUR CHOICE

by C. G. Martin
Southern Bell Telephone and Telegraph Co.

COULD you make a choice between firing at a dove and possibly knocking out someone's telephone service or let the bird pass and wait for a safe shot? That's a choice which many hunters have faced in the past, although they may not have realized it.

With the opening of hunting season only a few days away, there will be many words of caution written and spoken concerning the safe use of firearms.

All sportsmen should be aware of the danger in directing guns toward persons, buildings and livestock.

This brings to mind still another facet of safe hunting practices every hunter should consider and of which he should be aware. Most hunters are courteous individuals; however, there are a few who become negligent or forgetful when it comes to other people's property.

One phase of hunting courtesy which has been overlooked in the past is damage to the many miles of telephone wires and cables which span our land and play vital roles in our nation's communication service.

These wires and cables, in addition to allowing you to carry on normal day-to-day conversations with your neighbors and friends, do many other demanding jobs for industry and national defense. Some examples of such services rendered are: data transmission, telemetering and various other forms of communication, including radio and television.

The nation's extensive defense system is tied together in part by telephone circuits. Also, let's not overlook the family that lives at the end of the road in a remote area and depends on the use of the telephone to keep in touch with doctors, fire departments, and law enforcement agencies.

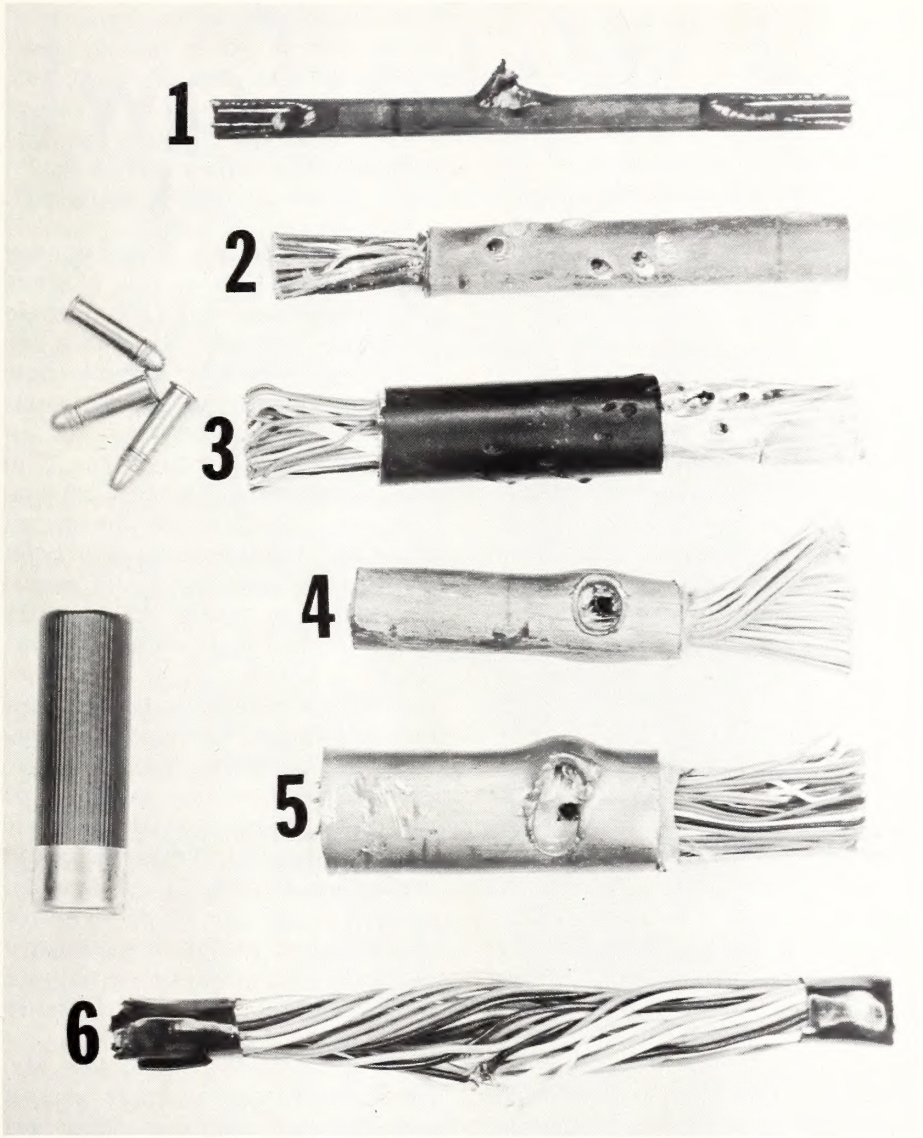
You can now realize the inconveniences it would cause should a load of No. 8 birdshot blast into one of these all-important connecting cables which link rural areas with the cities, and cities with other cities.

Everyone who hunts doves knows that one of the best stands in a dove field is by a utility pole. I am not suggesting that we dove hunters look like telephone poles, but it does seem that if we are backed up against or behind a pole, the dove does not notice our presence.

This puts the telephone cable in a hazardous position, because in most cases, if there is a utility pole, there is also located some twenty to twenty-five feet from its base some form of telephone plant.

Here is a typical situation. The birds are coming into shooting range. They fly closer, and the hunter trains his gun on them and takes into consideration the proper lead to insure a hit. He then swings the gun barrel in front of his target as he steps out from the pole he is using for a blind. Just as he fires, the bird passes over the telephone cable, and the damage is done. He may have accomplished his ultimate aim, bagging the bird; but in many cases, he has also damaged the communication line which was in the line of fire.

If the shot was at fairly close range, some of the pellets could have gone through the protective sheath of the wire and either shorted the wires or cut them in half. If the hunter was some distance from the cable, the protective sheath was penetrated but no immediate damage would re-



If the hunter at far left shoots before the dove passes the cables, someone may be out of telephone service. Line damage that can result is shown at left. No. 1 is rifle damage to rubber covered wire. No. 2 shows shotgun damage to a lead protective sheath. No. 3 is shotgun damage to plastic protective sheath cable with aluminum intersheath. No. 4 and 5 display .22 rifle damage to lead sheath cable. And No. 6 is rifle damage to unprotected conductors. Please be careful.

sult other than a possible opening in the covering. However, the small penetrations would allow water to enter at a later date and cause line interference. It is possible for as much as a quart of water to get inside the cable through a hole left by one No. 8 shot.

Let me explain a little about the construction of these cables which you have seen many times on hunting trips. The protective sheath is made of either lead or a form of plastic. It contains from twenty-five up to several hundred wires which are insulated one from the other within the outer protective sheath. The general appearance from the ground would make it look like one solid wire with a diameter from the size of a twenty gauge shotgun shell up to several inches. And too, some of the wires in the network do not have this protective covering which makes it even more vulnerable.

They look very much like a multi-colored rope; also, there may be times when you will see a wire carrying only a single circuit which would resemble an ordinary electric drop-cord.

In one of the Piedmont counties of the state, we had a call to our repair center one Sunday morning. The customer said his phone had been out of service all night, and several of his neighbors' telephones were inoperative. He said that he had traveled some distance to find a phone in order to report his difficulty. While clearing the trouble, we found that several places in the cable had been penetrated by shotgun pellets. One of these places was near the man's house who had reported his phone out of order. He asked the repairman what the trouble was. He was told that the cable had been hit by shotgun fire. During a rain the night after it had been shot, water had leaked into the cable and shorted out the conductor. It just so happened that this was a prime dove field near the farmer's house, and several bag limits of birds had been taken the previous day.

After finding out what caused his telephone to be out, the farmer was furious and told the repairman not to worry about it being shot again. He said there would be no more hunting in this field.

It was pointed out to this landowner that if he would tell those who requested permission to hunt on his land to avoid directing their shots toward the telephone cable, they would probably cooperate. The landowner did so and continued to allow hunting. The telephone company did not experience any more damage from hunters in this area.

So you can see how it can be quite easy for us hunters to shoot ourselves out of a place to hunt.

The forgoing examples, I hope, have given you some indication as to what problems can be posed concerning our communication system.

It is understood that unavoidable accidents do happen. If you think you have accidentally damaged any telephone property, please call your telephone company repair service so we may make repairs as soon as possible causing the least amount of inconvenience to the telephone user. This again is your choice.

Southern Bell Telephone and Telegraph Company would like to take this opportunity to wish all of you a very fruitful and safe hunting season. ⬍

Farmpond Waterfowl

by Luther Partin

A COUPLE of years ago, a Wake County motorist was surprised to see a flock of about 30 mallards zoom across the road ahead of him at tree-top height and disappear behind a hill. If it had been in the fall or winter he wouldn't have been quite as puzzled; but here it was almost the first day of summer. A self-respecting mallard ought to be in the prairie pothole country by now, he pondered, making arrangements for the perpetuation of his kind.

The press of business soon pushed the matter back into a corner of his mind. A few days later, near the same spot, he saw the unmistakable V-formation of a flock of seven Canada geese. Now he was really perplexed. Canadas should certainly be nesting in the far north at this time of year. The memory of the mallards coupled with the last amazing sight prompted him to find an explanation.

A call to the Wildlife Resources Commission provided him with the answer. Mr. W. V. Green, a local dairy farmer and also a waterfowl enthusiast, had purchased the mallards and Canadas from licensed propagators and put them on a pond next to his milking barn. He kept one wing clipped on each bird so they couldn't fly and they soon became accustomed to him and the surroundings. They would even come in close to get the feed he scattered along the edge of the water; but let someone else come with him and they headed for the other side of the pond.

When he decided the birds really felt at home, Mr. Green quit clipping the wings. They began flying around the farm on short flights but always came back. Now they fly quite freely to the other ponds on the farm and, except when flightless during molting, may be seen winging over the fields in great circles, or with wings set, whistling down to splash gently into one of the ponds. The fields around the ponds always have grazing for the geese and ducks. Aquatic foods are available in the ponds and there is always the daily feeding of corn or commercial feed that brings them hurrying across the water, or, at the sound of Mr. Green's whistle, flying in from the other ponds.

Nesting has occurred each year with both types of waterfowl, but the ducks have been more successful than the geese. Predators, especially free-roaming dogs, take a heavy toll of eggs and sometimes kill the female duck on the nest. The geese are better equipped to defend their nest, except against an occasional curious cow that may get inside the fenced nesting area. The ducks may renest if the first one is broken up, but not the geese. Poor hatchability has also been a limiting factor with the geese. At least one of the mated pairs has produced eggs each year, but never a hatch.

There are hazards to the welfare of young ducklngs and goslings in Tarheelia, just as in the waterfowl breeding grounds of the north. Here they are primarily represented by large snapping turtles and adult largemouth bass. A large specimen of either of these two water dwellers can make short work of a day-old duckling, and with a little more effort, even a young gosling.

In spite of the obstacles, Mr. Greens's waterfowl have shown considerable increase. Starting with 8 Canadas and 25 mallards, he now has 18 geese and 90 ducks. Assistance from the dog warden in controlling stray dogs has helped reproduction. Some of

Waterfowl have many obstacles to overcome in perpetuating their kind in North Carolina, but this flock has done very well; a real good group for any pond!

the large snapping turtles have been removed by baited hooks. Next year's plans include the provision of new nesting sites, either floating or mounted on poles in the water, to reduce molestation by land animals. These measures should provide even better reproduction in the future.

Perhaps only another waterfowl enthusiast can understand why a person will devote so much labor and expense just to have waterfowl for esthetic enjoyment. Wildlife Commission records show that over 264 permits were issued last year to people holding migratory waterfowl. Many of these were in the coastal counties, but the far western county of Buncombe, for example, had a half dozen permit holders. Many of these people have never hunted waterfowl; they simply enjoy watching the year-round activities of ducks and geese.

Migrating waterfowl may be attracted by these captive flocks to stop over for food and rest. It is not unusual for some of these northern visitors, particularly mallards, to hang around for extended periods enjoying the free food and lodging. Many small flocks on farm ponds swell to twice their normal size during the winter, to the added delight of the observer.

It is very interesting to note that a Wake County resident reported a small flock of mallards visited his pond in 1963 and stayed on through the nesting season. Over 50 ducklings were produced. In the following year another group of mallards raised about half that many. The origin of the mallards is anybody's guess, but we might speculate that they were inspired by, if not descended from, one or more of the several farm pond flocks in a 10-mile radius. This is an encouraging development, whatever the reason.

Some waterfowl observers fear that the present rate of habitat destruction will eventually reduce waterfowl numbers to the point that they can only be utilized esthetically. Other observers point to the some two and one-half million ponds in the United States as a possible substitute for lost waterfowl habitat. People in North Carolina with small flocks of waterfowl have a head start in either case. ⬍⬍

A gander can be a tough customer when he senses danger to his offspring. This one (above) warns Mr. Green away from the nest in old tire. Like stately sailing ships, these Canadas (below) glide across the pond. Young stay between adults.

This well-camouflaged hen mallard incubates her eggs on a Wake County pond nest.

Doves .... the Hard Way

by Ervin Ray

WANT to have some fun? If you do, then try dove shooting with a muzzle loading shotgun. The old-time percussion-fired single or double guns will give you a thrill you'll never get shooting a modern shotgun.

There are many good 12, 16 and 20 gauge percussion muzzle loading shotguns available, many still in good condition. The cost of these guns will range in price from $25.00 to $200.00 depending upon quality and condition. But before you run out and buy the first one obtainable, remember to look carefully for the following defects:

- Thin muzzle—if the end of the barrel is worn thin and sharp, the gun is not safe to shoot.
- Pitted bore—if the bore is pitted, do not buy. The condition of the bore can be determined

Pictured here is some of the equipment that transports the modern sportsman back into a bygone era where each shot counted. Above, 3½ drams of black powder is poured down the barrel.

And then, still while the doves are buzzing the area at tree-tip height, a carefully pre-cut cardboard wad is placed in barrel. Only practice makes procedure smooth.

by dropping a shiny object down the bore and then shining a light in the end of the barrel. The light will be reflected up the barrel to show any roughness.

- Cracked stock—if the stock is badly cracked, you will have to restock the gun before you shoot.
- Inoperative locks—be sure the hammers will cock and the triggers work.

With the advice just given, you are on your own. Let your pocketbook be your guide.

Cap Size

After you have purchased your "charcoal burner," it may be necessary to replace the nipples as this part of your gun should be perfect in order to give you top performance. Nipple size varies with the gun, so you will have to buy the percussion cap that fits the nipple on your gun. Most shotguns take a size Number 10 or 11 percussion cap. Do not attempt to shoot any percussion shotgun with any powder except BLACK POWDER. The damascus twist barrels on percussion shotguns will not stand the pressure created by smokeless powder. The recommended powder is FFg Black Powder. The recommended load is:

gauge	drams powder	ounces shot
12	3¼	1¼
16	2¾	1
20	2½	⅞

Ready to try loading? First, be sure you fire a percussion cap on the nipple to clear the touch hole. Then pour the black powder charge down the barrel. Follow the powder with a pre-cut cardboard wad, .135 inch thick. This wad must be pushed down the barrel with the ramrod. Your shotgun did not have a ramrod? Then make one out of a straight hickory stick.

Extract Ramrod

After the over-the-powder wad is seated firmly with the ramrod, pour the shot charge down the barrel and follow with another cardboard wad preferably .070 inch thick. Seat the wad firmly against the shot with the ramrod. Don't forget to remove the ramrod before you fire!

The shotgun is now loaded but it must be capped to fire. Cock the hammers and place a percussion cap on the nipple. Now you are ready to fire. If you must wait for a shot, ease the hammers down to half-cock, which is "safety" on percussion shotguns. Try shooting a few clay birds to get the feel and balance of the shotgun. Use the same load you will use on doves. This will give you an idea how you will do on the "grey ghosts."

After shooting, remember to clean your percussion arm thoroughly, or the corrosive action of the black powder residue will rust the barrels.

Gun Care

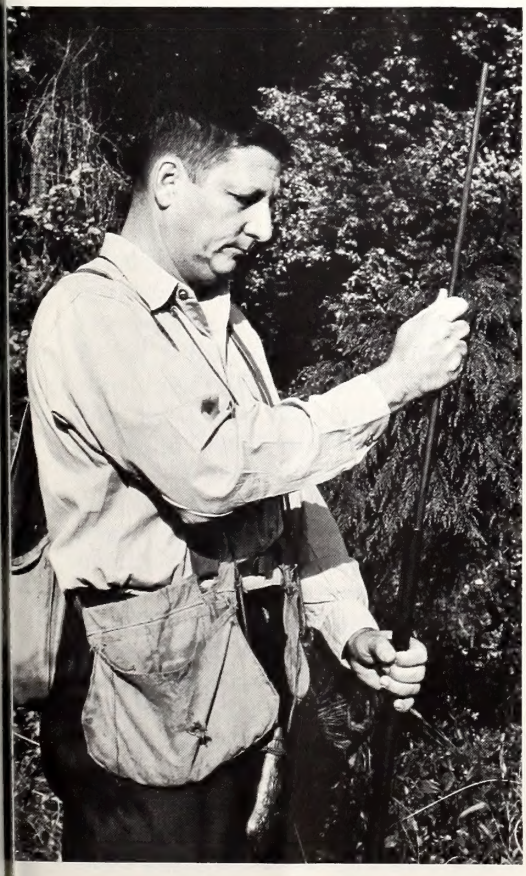
To clean your gun, wash the inside of the barrels with water until no more black residue comes out. Then dry and swab generously with powder solvent. In a couple of days, remove the powder solvent and coat the bore with gun oil.

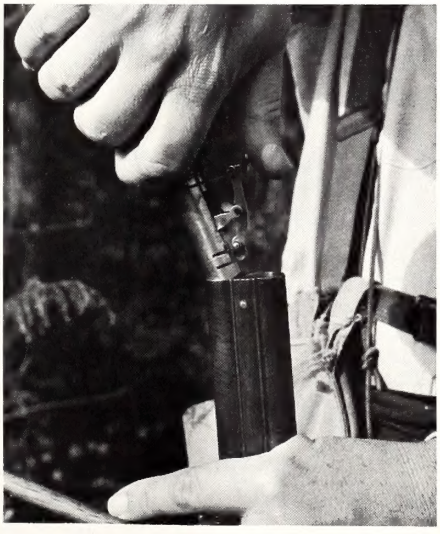
Ready to try some dove shooting? Then head for the field with your "smoke belcher" and powder, shot, wads, and percussion caps. In the field, load, cap and when the whistling wings of grey come over just let her rip. With a deep-throated boom and a cloud of stinky smoke, "ole Betsy" will shoot where you aim. You can kill doves just as far away as your fellow hunter shooting an equivalent modern load.

Don't be surprised if a hunter comes running over to see if you have been hurt in the explosion, for your "smoke pole" will cause more comment than a Midas-grade Browning.

When you get your first limit of doves with your muzzle-loader, you will be as proud as you were the day you shot your first dove. Take it from this confirmed dove hunter, you never had so much fun as you will have when you try them with a muzzle loading shotgun. ◆

Photos by Joel Arrington





The wad is firmly seated with the ram rod, and then a measured amount of shot is poured in (upper right). After the shot charge, another wad and we're ready for action. We get it—kerpow!

LUTHER PARTIN

Who killed how many of which game species in North Carolina last year? You may be a bit surprised at the figures on page 20.

Game Kill Survey 1964-65

by Frank B. Barick, Andrew J. Weber and Jerry Wood*

TARHEEL harvest of several game species topped all previous records during the 1964-65 hunting season, according to reports received from hunters in the recently completed game kill survey. The survey also indicated that hunters are going afield in numbers greater than ever before.

Especially noteworthy was the interest of hunters in the statewide wildlife program as demonstrated by their cooperation in responding to the survey questionnaire. This document, asking for detailed information on where the recipient hunted, how often, and what he killed, was mailed to some 10,000 randomly selected license holders in all sections of the state. Replies were received from 78 percent of all that were deliverable on the basis of address shown on the license. Since response to surveys of this type seldom exceeds 65 perecent, this level of response may be taken to indicate a high level of interest on the part of Tarheel hunters in the status of their sport, and we hope, an enviable rapport with the wildlife program in general.

While the questionnaire was not mailed until the day after the close of the general hunting season, preparation for mailing began several months earlier. As sold hunting license stubs started to come in from license agents all over the state in October, one out of every 40 was pulled for compilation of a mailing list. Thus, by mid-February there was compiled a list of over 10,000 hunters from 408,000 hunting license stubs representing about 98 percent of all hunting licenses sold.

These addresses were entered on punch cards and the questionnaires were machine-addressed in a matter of hours. In former years manual typing of addresses required several weeks. As the returns were received, the information contained in them was punched into cards. Three weeks after the first mailing, follow-up letters and questionnaires were sent to those who had failed to respond. A third and final letter at the end of six weeks was sent to those who failed to respond to the first two.

The high level of response had another beneficial aspect. Statisticians have determined that in surveys of this kind the higher the level of responses the more accurate the resulting data. In statistical language, "variance" of state-wide kill figures for most species covered by this survey was less than 10 percent at the 95 percent level of probability. This means that the chances are 95 out of a 100 that the indicated total is within 10 percent of the actual figure. Since our previous surveys have ranged around 30 percent or greater variance at the 85 percent level of probability, this year's results are very good indeed!

As a result of this high level of reliability, it was also feasible to compute subtotals and averages for each of the nine Wildlife Commission districts. Incidentally, this is the first time that regional kill figures such as these have been available for the State of North Carolina.

While several species were not covered by this survey, these species probably do not take more than about five percent of the total hunting effort. Hence the figures in the tabulation of kills and hunter-trips would not be much changed by their inclusion. Unsampled hunting included wild boar, wild turkey, woodcock, marsh hens, and fox and coon hunting. These will be covered in future surveys on a rotation basis.

So much for bragging on our

*Chief, Division of Game, Game Research Project Leader, and Data Processing Manager, respectively, North Carolina Wildlife Resources Commission.

statistics. Now let's look at the figures, by species, in the order in which they were listed on the questionnaire:

Deer

The state-wide deer kill was computed at 39,792—up 11,000 from 1962 and nearly double the kill reported ten years ago. District 2 topped all others, producing over 10,000 deer, or over 25 percent of the state total. Runners-up were Districts 3 and 1, each producing about 6,000 deer or about 16 percent of the total. District 4 was in fourth place with about 5,000. Districts 8 and 9 together produced about 6,360 but nearly a third of these were taken on management areas. The "Camp Butner" kill of District 5 (2,258) almost matched the "Uwharrie and Sandhills" kill of District 6 (2,434). District 7 produced only about 761 kills or barely two percent of the total.

Deer hunting success was highest in District 5 where it took an average of 12½ hunter-days per kill; close behind was District 1 where it took about 14 hunter-days of hunting to make a kill, compared to the state average of about 20 days per kill. Much of the greater success rate in these two districts was due to either sex deer seasons.

Bear

Most of the bears were killed in Districts 1 and 2 with only a very few in Districts 4 and 9. Hunting was reported in Districts 7 and 8 but none of the hunters contacted in the survey had made any kills. No bear hunting was reported in Districts 3, 5 and 6. Statewide, bear hunters were outnumbered by deer hunters about twelve to one.

Squirrel

The most interesting feature of the squirrel kill was its uniform distribution across the state. No district killed fewer than 7½ percent of the total and none killed more than 14 percent. Even the low district (No. 1) killed over 265,000 and Districts 6 and 8 were nearly tied for the high place with about 477,000 and 492,000, respectively. Success rates were also quite uniform, varying from 1.11 to 1.74 squirrels per hunting trip. The highly uniform kill of squirrels in all parts of the state supports the addition of squirrels to the ranks of rabbits and quail in a uniform state-wide season.

Rabbit

Rabbit kills showed a little more variation than squirrels, ranging from about 131,000 in District 1 (four percent of the total) to about 504,000 in District 6 (16 percent of the total). Success rates varied about as squirrels, i.e., from a low of 1.01 rabbits per hunting trip in District 9 to a high of 1.53 in District 2.

Quail

While quail populations are generally regarded as being the highest in the Coastal Plain, the greatest kills were made in the Piedmont counties. For example, the total kills in Districts 1 and 2 were reported as about 159,000 and 290,000 birds, respectively, but in Districts 5 and 6 the total kills were 545,000 and 532,000. This is probably more a reflection of hunter numbers than bird population since there were more than twice as many hunters in these Piedmont districts. This probably means that a substantial portion of the eastern birds remain unharvested. Similar conclusions might be drawn regarding the kill of rabbits and squirrels.

Doves

Districts 4 and 6 produced most of the dove kills—over one million and nearly 38 percent of the state-wide total. This parallels the normal southward migration pattern of doves across the central piedmont section of the state. In spite of increasing gunning pressure, doves continue to be one of our most abundant game birds.

Grouse

These birds are found only in the three mountain districts and of the 63,000 reported killed, 13 percent were produced in District 7, 25 percent in District 9, and 62 percent in District 8. It's interesting to note that hunters in District 8 also reported success rates several times as high as those in the other two districts—about one and three quarters birds per trip as compared to half a bird or less per trip in the other two districts.

Ducks and Geese

District 1 produced over 39 percent of the ducks and over 84 percent of the geese. District 2 came second with about 24 percent of the ducks and 7 percent of the geese. A remarkable feature of the waterfowl kill was the 10,000 reported killed in District 8 and nearly as many in District 6. Together these made up 15 percent of the total kill, and they were, of course, taken on the rivers and power reservoirs of these sections.

General Observations

The tremendous importance of our small game species is again emphasized by this survey. Squirrels, quail and rabbits, in that order, attracted 73 percent of the hunting effort. Add doves to this and it comes to 84 percent, and grouse brings it to 85 percent. Deer were, of course, the primary big game species and absorbed about 10 percent of the total hunting effort while waterfowl provided most of the remaining five percent. Bear hunting rated only .4 percent.

The figures also indicate that hunters in the eastern part of the state spend more time hunting than those in the west. This is indicated by the observation that the percentage of hunting trips taken in Districts 1, 2, 3, and 4 is higher than the percentage of hunters in these districts, while in the three mountain districts (7,8,9) the percentage of hunting trips is lower than the percentage of hunters.

Sportsmen Opinions

Several questions relating to hunting locale were included in the questionnaire. Replies indicated that about 36 percent of the hunting was on land owned by the hunter or his family, about 55 percent on other private land and about 9 percent on public land. Hunters indicated about a three to one favorable response

• continued on page 27

ESTIMATES OF HUNTERS, TRIPS AND KILL OF GAME BY DISTRICTS FROM 1964-65 MAIL SURVEY

		STATE		DISTRICT 1		DISTRICT 2		DISTRICT 3		DISTRICT 4		DISTRICT 5		DISTRICT 6		DISTRICT 7		DISTRICT 8		DISTRICT 9	
		NUMBER	%	NUMBER	%	NUMBER	%	NUMBER	%	NUMBER	%	NUMBER	%	NUMBER	%	NUMBER	%	NUMBER	%	NUMBER	%
DEER	HUNTERS	125,083	12	9,443	8	19,792	16	12,427	10	15,038	12	7,905	6	12,942	10	10,180	8	21,757	17	15,599	13
	TRIPS	894,035	10	88,512	10	220,587	25	139,943	16	146,043	16	28,417	3	67,267	8	30,786	3	100,703	11	71,777	8
	KILL	39,793		6,294	16	10,217	26	6,405	16	5,064	13	2,258	6	2,434	6	761	2	3,777	10	2,583	5
	KILL PER TRIP	.05		.07		.05		.05		.04		.08		.04		.03		.04		.04	
BEAR	HUNTERS	10,899	1	1,009	9	1,623	16	-		251	2	-		-		306	3	2,544	23	5,166	47
	TRIPS	37,938	.4	4,925	13	6,519	17	-		287	1	-		-		2,057	5	11,507	30	12,643	34
	KILL	628		238	38	380	61	-		2	0	-		-		0	0	0	0	8	1
	KILL PER TRIP	.02		.05		.06		-		.01		-		-						.001	
SQUIRREL	HUNTERS	270,938	26	13,389	5	29,780	10	31,837	12	25,035	9	34,881	13	39,517	15	26,270	10	39,417	15	30,812	11
	TRIPS	2,504,823	28	152,989	6	279,458	11	353,620	14	278,378	11	291,115	12	338,413	14	227,537	9	314,830	12	268,483	11
	KILL	3,544,319		265,433	8	390,833	11	393,492	11	349,668	10	402,380	11	477,096	14	334,999	9	492,482	14	437,936	12
	KILL PER TRIP	1.42		1.74		1.40		1.11		1.26		1.38		1.41		1.47		1.56		1.63	
RABBIT	HUNTERS	257,153	24	12,056	5	22,999	9	32,403	13	23,264	9	37,401	14	42,568	16	27,324	11	35,275	14	23,863	9
	TRIPS	2,384,947	27	107,593	4	238,965	10	393,591	17	276,888	12	311,766	13	377,736	16	207,899	9	292,065	12	178,444	7
	KILL	3,078,019		131,293	4	365,373	12	470,231	15	357,697	12	401,795	13	503,924	16	261,982	9	406,044	13	179,680	6
	KILL PER TRIP	1.29		1.22		1.53		1.20		1.29		1.29		1.33		1.26		1.39		1.01	
QUAIL	HUNTERS	170,874	16	7,573	4	17,031	10	22,140	13	21,238	12	26,031	15	32,620	19	14,480	8	19,088	11	10,673	6
	TRIPS	1,626,897	18	82,151	5	157,678	9	238,631	15	250,457	16	295,873	18	286,345	18	116,135	7	139,949	8	59,678	3
	KILL	2,826,640		159,418	6	289,554	10	417,539	15	406,450	14	545,270	19	532,267	19	204,810	7	225,624	8	45,708	2
	KILL PER TRIP	1.74		1.94		1.84		1.75		1.62		1.84		1.86		1.76		1.61		.77	
DOVE	HUNTERS	152,507	14	5,931	4	18,602	13	18,035	12	17,833	12	22,721	15	32,518	21	12,959	8	18,796	12	5,112	3
	TRIPS	968,666	11	32,547	3	140,680	15	122,827	13	162,969	17	118,145	12	205,499	21	64,872	7	102,836	11	18,291	1
	KILL	3,002,220		108,884	4	428,693	14	371,294	12	494,053	16	413,857	14	635,294	21	222,421	7	292,456	10	35,268	1
	KILL PER TRIP	3.10		3.35		3.05		3.02		3.03		3.50		3.09		3.43		2.84		1.93	
GROUSE	HUNTERS	23,070	2	-		-		-		-		-		-		3,976	17	5,960	26	13,134	57
	TRIPS	88,873	1	-		-		-		-		-		-		15,792	17	22,424	25	50,657	57
	KILL	63,043		-		-		-		-		-		-		7,937	13	39,178	62	15,928	25
	KILL PER TRIP	.71		-		-		-		-		-		-		.50		1.75		.31	
DUCKS	HUNTERS	29,485	3	6,793	23	6,757	23	3,047	10	4,760	16	1,727	6	3,765	12	593	2	1,350	5	693	3
	TRIPS	185,337	2	56,199	30	35,485	19	15,733	9	28,410	15	5,851	3	22,440	12	3,156	2	15,498	8	2,565	1
	KILL	142,375		55,911	39	33,639	23	10,112	7	14,203	10	4,212	3	9,853	7	2,560	2	10,604	7	1,281	1
	KILL PER TRIP	.76		.99		.95		.64		.50		.72		.44		.81		.68		.50	
GEESE	HUNTERS	13,300	1	8,654	65	1,926	14	465	3	118	1	3	-	1,685	13	352	3	97	1	-	
	TRIPS	74,661	1	60,564	81	7,830	10	1,359	2	371	-	5	-	3,724	5	704	2	104	-	-	
	KILL	27,938		23,509	84	1,942	7	1,036	4	114	-	0	-	1,125	4	117	1	95	-	-	
	KILL PER TRIP	.38		.39		.25		.76		.31				.30		.16		.91		-	
TOTAL HUNTERS*		1,053,309	99	64,848	6	118,510	11	120,354	11	107,537	10	130,669	12	165,615	16	96,440	9	144,284	14	105,052	10
TOTAL TRIPS		8,766,177	98	585,480	7	1,087,202	12	1,265,704	14	1,143,803	13	1,051,136	12	1,301,424	15	668,938	8	999,916	11	662,538	8

* This is the total of all hunters who hunted for deer plus all who hunted for bear plus all who hunted for squirrel, etc. Thus, since many hunters hunt for more than one type of game this total is more than the total of licensed hunters.

Southeastern Crow Shoot

The target area for the Southeastern Crow Shoot is shown in the above map. It includes Granville, Vance and Warren counties in North Carolina; Mecklenburg, Lunenburg and Brunswick counties in Virginia. The dates October 8 and 9.

by Malcolm Boren

THE Henderson North Carolina Junior Chamber of Commerce will sponsor on October 8th and 9th the Southeastern Crow Shoot. This hunting and calling contest will be a "first" for the Tarheel State. The other crow contest is the "National Crow Shoot" and is a summer event dating back to 1935. Membership of the National Crow Hunting Association will receive notice announcing the Southeastern Shoot along with publicity in three national hunting and fishing magazines.

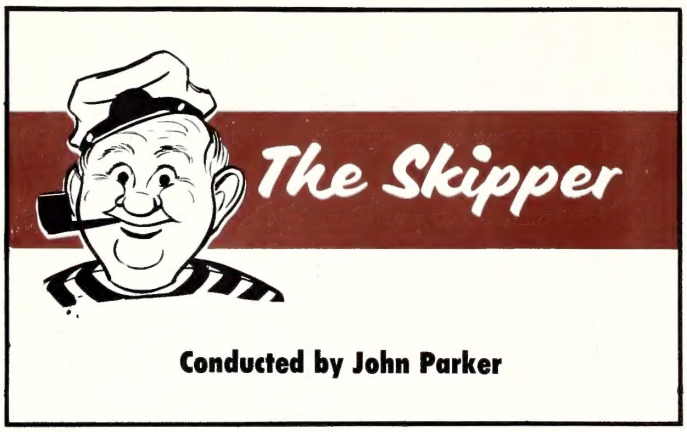
North Carolina shooters are encouraged to contact the Henderson "Jaycees", Mr. Billy Williams, President. Mail c/o Pepsi-Cola Bottling Company in Henderson. Entry blanks, rules and regulations and time schedule will be mailed on request. The calling contest will take place Friday evening at the National Guard Armory which will serve as headquarters in Henderson. Hunting will get underway early Saturday, October 9th, with two divisions scheduled in singles shooting. The doubles class will follow in the afternoon. Drawings will take place to select a Jaycee to serve as driver, guide and referee. Each guide will have a predetermined starting point to reach before shooting starts. When the contest begins the hunter is free to select his shooting territory and stands. The guide will record route to be examined later by doubles shooters. Whenever possible the Jaycees will seek hunting permission. Little if any opposition would be voiced from landowners judging from my 20 years of banging at crows.

October 9th was selected as the hunting date for several reasons. Crows are at peak migration and more active in *cooler* weather. Migrating crows swell local population and do considerable damage to the peanut crop which is stacked above ground in October. Cover is good and the only hunting in progress would be afternoon dove shooting.

The Wildlife Commission will have a game biologist on hand to assist in counting dead crows. Winners will be selected solely on number of birds killed and picked up. Wardens and protectors from North Carolina and Virginia will also be on hand at the beginning of the event to explain hunting laws for the two states.

The three-county shooting area in North Carolina will be under surveillance by local protectors and hunters will not be eligible to enter if found shooting in this territory 30 days prior to shoot (October 9th).

Entries will be taken on a first-come basis with a $5.00 deposit assuring shooter of a Jaycee guide. A limit of 60 shooters will be placed on the combined singles classes. North Carolina shooters will have four special trophies to crown state champions in all events. Twenty other outstanding pieces of silver will go to the top four men in all classes. Being the only North Carolina shooter to take part in the national crow shoot, let me assure you that I've hunted with many local enthusiasts that can compete on a par with the best.



Conducted by John Parker

This month's column, written by Marshall Staton, P.E., points up a new law which is designed to combat one phase of water pollution. Mr. Staton is Assistant Director of the State Board of Health's Sanitary Engineering Division.

TODAY the lakes and reservoirs of North Carolina are being used more than ever before for recreational purposes. This is partially due to an increase in leisure time, a prosperous economy, and a desire of people to get away from crowded urban areas. One indication of the degree of activity in water recreation is reflected in motor boat registrations. It is interesting to note that there were 48,000 boats registered in North Carolina last year. Many other boats are in use but are not required to be registered due to their lower horsepower rating.

Boat ownership has been increasing, and the trend appears to be for larger boats that provide on-board living accommodations. If the health of those who recreate in the waters of the State is to be protected, and if we are to continue to enjoy our water resources, it is essential that we maintain high quality water through pollution control practices. The following is written in order that the public might be informed of recent legislation pertaining to pollution of inland lake waters.

In 1963, the Corps of Army Engineers recognizing that the discharge of untreated sewage from boats could create problems on reservoirs in North Carolina that were under their control, requested the State Board of Health to study various treatment devices and advise them as to those that were acceptable. After criteria governing the design of sewage treatment devices and holding tanks had been adopted by the State Board of Health, the Corps of Engineers advised boat owners that all boating permits (required for boats remaining on Corps lakes for more than three consecutive days) issued by the reservoir manager would be revoked and that no new permits to operate their boats on Corps-operated reservoirs would be issued until approved sewage treatment devices had been installed on all boats using marine toilets. Also, in 1963 the General Assembly enacted legislation prohibiting the discharge of untreated sewage into Lake James.

In order to better cope with such problems and to have uniform Statewide laws governing boating and other recreation activities, a resolution was adopted by the 1963 General Assembly authorizing the appointment of the North Carolina Aquatic Recreation Study Commission for the purpose of investigating all matters relating to the recreational use of streams and lakes. An amendment to Chapter 75A of the General Statutes, which is known as the North Carolina Boating Safety Law, was enacted by the 1965 Legislature upon recommendation of the Study Commission.

It is believed that this legislation will be of interest to all people, who concern themselves with clean water, as it pertains to the discharge of sewage, garbage, trash or other solid materials which render the water unsightly or otherwise unwholesome so as to be detrimental to the public's health or to the enjoyment and safety of the water for recreation. The effective date of this law is January 1, 1966. It will be enforced by the Wildlife Resources Commission. Wildlife Protectors under this new law will be required to inspect vessels for proper sanitation devices when they check for other required equipment.

The Legislature authorized and directed the State Board of Health to prepare design standards that will be used as a guide in approving sewage treatment devices and holding tanks for marine toilets installed in boats operating on *inland lake* waters of the State. It should be noted that the law is applicable only to inland lakes and does not require boats to be equipped with toilets. However, it does require approved treatment devices or holding tanks on any "vessel" equipped with a marine toilet while "operating" on an inland lake in North Carolina. It also prevents the discharge of litter, raw sewage, bottles, cans, papers, or other liquid or solid materials into the inland lake waters.

For the purpose of interpreting this law, the term "vessel" shall mean every description of watercraft or structure other than a seaplane on the water used or capable of being used as a means of transportation or habitation on the water. "Operate" shall mean to navigate or otherwise use or occupy a motorboat or vessel and shall be applicable to any motorboat or vessel that is afloat.

Sewage treatment devices and holding tanks that have been demonstrated and found to be acceptable to the State Board of

Health are listed below. These manufacturers have distributors serving North Carolina. Other equipment is under consideration for approval at the present time.

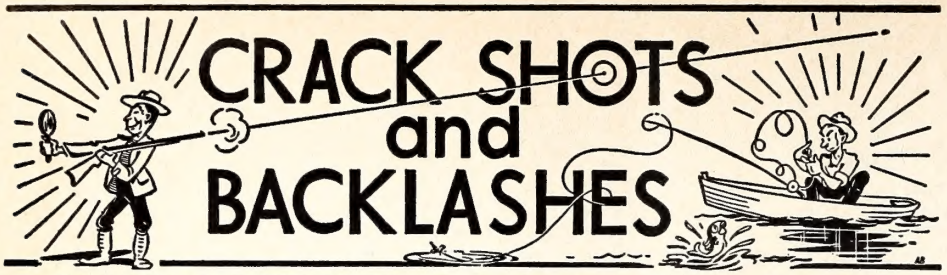
1. Mono-Marine Sanitation system as manufactured by Monogram Industries, 8447 Higuera Street, Culver City, California. This is a holding tank system with deodorizing material placed in the tank. These should be quite satisfactory and are approved for use in vessels where marinas are equipped to pump the sewage from the holding tank and dispose of it in an approved manner. The tanks may be purchased in two sizes—10 gallons and 20 gallons. Several marina operators have indicated an interest in providing facilities to service vessels using such holding tanks.
2. Destroilet manufactured by LeMere Industries, Walworth, Wisconsin. This is an incineration type toilet. As it operates on propane gas, it would be most applicable on houseboats or other large vessels that use propane gas as a source of fuel for cooking, heating, etc. It should be located in well-ventilated areas.
3. C-Chlor Mark 5 Automatic chlorinator, Carlson and Son, Forrest Street, Metuchen, New Jersey. This is a grinding and chlorinating device that operates on a six or twelve volt DC electrical system. It uses household laundry bleach containing 5.25 percent sodium hypochlorite as a disinfectant. This device grinds the solid particles and chlorinates the waste prior to discharge. When properly operated and maintained, these units should produce an effluent that contains no unsightly floating solids and the bacteria count should be quite low.

As indicated above, this law applies only to the inland lake waters. For the protection of the public's health, it should apply to all the waters of the State; therefore, all boat owners who use marine toilets aboard their boats are urged to install an approved sewage treatment device or holding tank.

In an effort to prevent pollution and to protect the health of persons using recreational waters, some boat owners have purchased sewage treatment devices that have not been approved and which may not be approved in the future. Persons who now own such devices will be permitted to continue using them until January 1, 1969.

Persons interested in more information on this new law should contact the Wildlife Resources Commission—or the State Board of Health if your questions pertain to specifications of the required equipment. ⬍⬍

Approved holding tank and associated equipment is demonstrated here. Marina attendent hooks on to a cruiser to empty holding tanks. It requires less than two minutes to purge the boat's system. The small portable pump (left foreground) transfers the sewage from the cruiser to an approved disposal system on the shore.



DEPARTMENT OF LETTERS TO THE EDITORS, FIELD NOTES, AND ITEMS OF INTEREST

Conducted By Rod Amundson

Although September brings us many warm, lazy hazy days, this month nevertheless marks the opening of the seasons on migratory game birds.

First to get under way will be the dove season, set for Saturday, September 11, with the first segment of a split season to end October 16; the second segment would open December 11 and end January 13. Once again shooting hours for doves will be from noon to sunset, and the daily bag 12 birds.

Next in line are marsh hens, set for September 20 through November 28. Bag limits for marsh hens (including rails, sora and gallinules) will be 15 daily, 30 in possesson, either single species or a combination of species.

Doves seem to be in excellent suppy again this year, and as usual the supply of marsh hens will far exceed hunters' demands. Marsh hen shooting is highly specialized, requiring extremely high tides that flood salt marshes to make the birds available to flushing by poled skiffs.

Slightly more than 3,000,000 doves were shot last year in the Tarheel State. Despite this slightly fantastic number, enough birds will be available for at least an equal harvest during the upcoming season. Figuring at least three shots per bird on an average, this should add up to good news for ammunition manufacturers and dealers throughout the state.

Seasons on migratory game birds, including woodcock, snipe, doves, marsh hens and waterfowl, are controlled by the U. S. Fish and Wildlife Service, but the Wildlife Resources Commission is given a framework of dates from which to select optimum seasons geared to the migratory habits of the birds and to give hunters the best possible hunting. The Commission has no voice in the selection of bag limits or shooting hours.

Attention Marsh Hen Hunters

Tide Data—Southport, N. C.

Date	*Time*	*Hgt.* (feet)
Sept. 20	3:39 PM	5.0
21	4:43 PM	5.2
22	5:41 PM	5.4
24	7:05 AM	5.2
25	7:55 AM	5.4
27	9:31 AM	5.4
28	10:18 AM	5.2
29	11:05 AM	5.0
Oct. 12	8:43 AM	5.0
13	9:31 AM	5.1
14	10:10 AM	5.0
15	11:04 AM	5.0
20	4:27 PM	5.0
21	5:22 PM	5.1
22	6:15 PM	5.1
23	7:04 PM	5.0
23	6:46 AM	5.4
25	8:20 AM	5.5
26	9:04 AM	5.4
27	9:48 AM	5.2
Nov. 9	7:41 AM	5.1
10	8:25 AM	5.2
11	9:11 AM	5.3
12	10:01 AM	5.2
13	10:55 AM	5.1
22	7:13 AM	5.2
23	7:57 AM	5.3
24	8:40 AM	5.1

Time given is for Southport. Beaufort-Morehead City time will vary from 13 to 60 minutes later.

To The Point

DEAR SIRS: I am in complete agreement with your article on free running dogs in the May issue. The person who runs beagles or deer dogs in closed season is in the same category as a jack-lighter of deer and should be treated as such. No sportsman worthy of the name would run hounds when game is bearing young.

Anyone who pays dues to a wildlife club dedicated to the conservation of game and runs his dogs out of season is a hypocrite. The officers of said club knowingly accepting dues under these circumstances are no better than the person who runs the dogs out of season.

If our state legislators are interested in the conservation of wildlife let them pass laws to stop free running dogs or cats, providing for stiff fines or jail sentences for the offenders. I believe such legislation is coming and so far as I am concerned it is long overdue. K. V. PRIVETT, JR., CHARLOTTE

Good Production

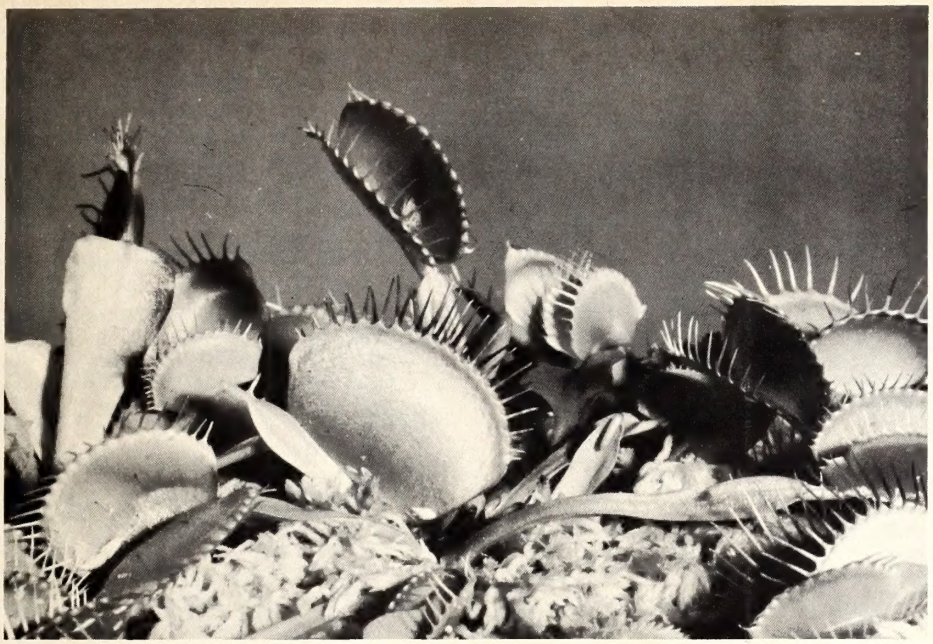
DEAR SIRS: On a private pond in Richmond County I have nine wood duck nests erected on poles in the water. You may be interested to know that wood ducks started using these nests as early as February 15 this year, and eight of the nests were used by wood ducks and one by an owl. I believe all eight of the wood duck nests were used at least twice as three of the nests have eggs in them now about ready to hatch (June 2). I observed about 35 wood ducks on my pond in December, 1964, and these were, I believe, a carry over from the 1963 hatch when I had four wood duck nests in the pond.

I saw no evidence of snakes or any other predators breaking up the nests this past season; however, in 1964 one of the nests was broken up by a snake. *Name withheld by request.*

To supplement natural nests, boxes are often erected for the wood ducks' use.

The Death of Venus

DEAR SIRS: On the back page of your July issue of "Wildlife in North



Carolina," you gave a few pictures of the Venus Fly Trap in its odd way of eating. In the early spring of this year I bought a Venus Fly Trap at the dime store. I planted and transplanted it according to the instructions. It grew to be quite interesting, everything went well, the blooms would be blooming in a week or two. Then it happened, the blossoms turned black and died. Gradually the stem began to turn black; then the traps started to turn black (dark brown). They died much faster after I fed them. I would like to know what happened to it, and where I can get another one. Thank you for your kindness. BARBARA DUNN, NEW BERN

This is a bit out of our line, but perhaps some of our readers can help.—Ed.

DEAR SIRS: The back cover of the July "Wildlife" was very interesting and informative. Our field botany class at East Carolina College was fortunate to be able to see and collect a "few" samples of the Venus' Fly Trap. The type of habitat required by these plants is rapidly decreasing; hence, it is necessary that the plants be protected to a certain degree. If you could, please ask North Carolinians to **not dig them up and carry them home to die or be thrown away.** It is rumored that some people collect the plants and sell them farther west, although many claim that the state has a law prohibiting this. As a future science teacher I hope to use your magazine a lot. Thank you for working so hard to present your readers such good articles and information. BILLY BARNES, CONWAY

The state law referred to is the 1951 Session Laws, Chap. 367 codified as G.S. 14-129.1 which makes it unlawful to sell Venus fly trap. This has been modified to permit sale of plants grown commercially on private land.—Ed.

DEAR SIRS: I enjoy reading your fine magazine, and would like some information on where I could secure some Venus Fly Trap plants as was on back page of your July issue of "Wildlife."

Keep up the good work. JOE BELK, WAXHAW

Although there are undoubtedly several local sources for this plant in North Carolina, we have only this one advertised supplier: Armstrong Associates, Inc., Box 127, Baskins Ridge, N. J. 07920—Ed.

Red-Faced

It's not often we admit a mistake *before* a reader calls it to our attention, but this time photographer Karl Maslowski who took the photo in question noticed something that we must pass on to you. The inside front cover picture in the June, 1965 issue shows a red-eyed vireo all right, but the young it is feeding are cowbirds; Karl told us this when we obtained the photo, but somehow it didn't register then. The vireo built the nest, a cowbird (as they often do) appropriated it temporarily, deposited the eggs and went on its way. The rearing task then became that of the vireo, who is still red-eyed.—Ed.

DEAR SIRS: I read in your July issue of **Wildlife Magazine** where you recommended the use of copper sulfate to clear up the moss in a farm fish pond.

What I would like for you to answer for me is, will copper sulfate harm farm animals that drink from a pond that it has been put in?

My husband and I take **Wildlife** Magazine and enjoy reading it very much. We think it a really great little magazine. Keep up the good work. MRS. R. L. WILSON, DURHAM

Copper sulfate applied in the quantity needed to kill "moss" (usually algae) in a farm pond is usually not sufficient to be harmful to livestock, being only 1 part of chemical to 2,000,000 parts of water.—Ed.

Budding Author

DEAR SIRS: Our nine year old son is doing several articles for our local county paper as part of his Wildlife 4-H Project. We would like to pass on his first article to you as it appeared:

WILDLIFE CONSERVATION

By Frayer Simpson, Atkinson Community 4-H Club

Animal life has suffered as man has made progress. As man has cleared forests, dammed rivers, and drained swamps, he does not realize how many natural homes for wildlife he destroys each year. Every individual should share in the responsibility of protecting our wildlife for future generations to enjoy.

We must all support and obey our game laws. If we don't many of our wild animals will become extinct. Every citizen is responsible for the protection of wildlife.

(Mrs. Frank Simpson)

Snake Down My Back

I had an old fish pond in my back yard.

The pond was ten feet long, six feet wide and about two feet deep. My family had kept gold fish in it. The pond had partly filled with leaves and dirt, because it had not been used for some time.

Somehow I got around to cleaning this old p o n d and thought that it would be a good place to keep minnows.

My older cousins and some of the men in the neighborhood used minnows for fishing, but

KNOW YOUR PROTECTOR

James W. Gant

Wildlife Protector, James W. Gant, stationed at Oxford, N. C. was born July 22, 1926 in Mt. Airy, Surry County. His parents are Mrs. J. W. Gant and the late Mr. Gant of White Plains, N. C.

He was graduated from White Plains High School and was employed by Central Telephone Company in Mt. Airy before attending Wildlife Protectors' Pre-Service Training School at the Institute of Government in Chapel Hill in 1956.

Gant has been stationed in Jones, Haywood and Cherokee Counties before coming to Oxford, N. C., and has attended all in-service training schools since 1956.

Protector Gant is a veteran of World War II, serving in the U. S. Navy from 1943 to 1949 in the Pacific Theater. He is a member of the Granville County Rescue Squad, a qualified Scuba Diver, and a Mason of Oxford Lodge #122.

Gant enjoys working with Scouts and 4-H Clubs and also enjoys hunting, fishing, camping, and skin diving.

He is married to the former Erlene McDowell of Greensboro, and they have four children, Dana Michael 12, Jamie Wesleyan 9, Jean Lounette 6, and Jaydan Autumn 3.

The Gants reside at 334 Kingsbury Street, Oxford, N. C. and are Baptists.

DIVISION ENFORCEMENT RECORD FOR FEBRUARY, 1965

HUNTING & FISHING

Persons checked	10,003
Total prosecutions	260
Total convictions	250
Total cases not guilty	2
Total cases nol prossed	8
Total cases dismissed	0
Total fines collected	$1,128.45
Total costs collected	$1,938.45

BOATING

Boats checked	399
Total prosecutions	16
Total convictions	16
Total cases not guilty	0
Total cases nol prossed	0
Total cases dismissed	0
Total fines collected	$55.00
Total costs collected	$120.75

All fines and any arrest or witness fees are paid into the school funds of the counties in which the violations occurred, and no part of the fines or costs collected are paid to the North Carolina Wildlife Resources Commission or its personnel.

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these minnows were expensive and at times difficult to find. So with this old pond and some thought about minnows, I decided to start a minnow selling business.

I had a place to put them but no minnows.

About a mile from where I lived was Brier Creek, where I went swimming and knew there were minnows in this branch.

I told my cousin about my plan, and we decided we could catch a few.

I began to gather pieces of rope, netting, weights, cork and to save my nickles and dimes. When I had enough money I bought an old seine and with the help of my mother soon had an eight foot minnow seine that was a beauty.

The day came when I was to try it. My cousin and I cut the handles from old brooms, so that each of us would have a staff.

We each took a pail and put a tub in my coaster wagon, and with my new seine on my shoulder headed by Brier Creek.

We were elated when we pulled the wagon into our favorate spot on the creek bank.

We carefully unrolled the seine and stretched it out to its full length, and ventured into the creek.

We selected a place that looked as if minnows would be there. One of us went along the bank with his end while the other closed in from midstream, using the broom handle to punch around the bank and grasses to run the fish into the net.

The first two or three tries netted us a few minnows, a crawfish, a horny head and a frog. This made us jubilant and spurred us on to greater efforts.

We saved everything and soon had both pails full and took time out to go to the wagon and pour catch in the tub.

Back in the creek again for a few more tries. This time as I went down to poke around the bank I felt something big hit the net, and there was motion in the water.

I said "Let's come up".

As I stretched my arms the length of the seine pole on my side and raised the net straight up out of the water, I had to raise it over my head to get it out of the water so I could see what was in it.

When the net broke water, the longest, blackest, ugliest snake I had ever seen went sliding up that net over the top and down on me. The snake hit head first into my shirt collar, which was loose at the neck, down my back and out the bottom of the shirt. I could feel his wet, cold body as he went down my back.

This happened so fast I did not have time to make a sound, but I did move.

I dropped my broom stick, the net and practically ran over my cousin while I was clawing my way to the top of the bank.

I kicked over the pail, ripped the net and bruised a knee in the mad rush.

This incident did not end our minnow business, it only led to more caution and better business.

Now when I want and need minnows I pull into the parking area at the "Minnows For Sale" sign, spend a couple of bucks and

have wonderful memories of adventures in the Minnow Selling Business.

Marshall Yarborough

GAME KILL

• continued from page 19

to a big game tag. Many unsolicited comments were received, most of them highly appreciative of the over-all Commission program.

The "Average Sportsman's" Kill

Of course there is no such thing as an average sportsman. Preferences vary and abilities vary even more. But if the reported total of game bagged were evenly divided among the 408,000 hunters who bought licenses, each one's share would include nine squirrels, seven and a half rabbits, the same number of doves, seven quail, one breast of

a duck, one drumstick of a grouse and the wing of a goose. "The average sportsman" would also have ten pounds of vension and a 5 ounce portion of bear meat. If we had to guess at his share of the species not covered by the survey, these would include one tail feather of a wild turkey, about six bars from the song of a fox or a coon hound and one grunt of a wild boar.

Maybe the few bucks it costs for a hunting license isn't such a bad investment after all. ◆

Pictured here are members of the Governor's Committee on Water Safety, recently appointed by Governor Moore. From left, Mrs. James A. Odum, Executive Director, Wake Co. Chapter, American Red Cross; Ralph Andrews, N. C. Recreation Commission; Cdr. J. C. Fox, U. S. Coast Guard; J. D. Foust, Dept. of Community Colleges; Gov. Moore; Committee Chairman Clyde P. Patton, Executive Director, Wildlife Resources Commission; C. R. Dodson, Commander, District 27, U. S. Power Squadrons; J. W. R. Norton, State Health Director, State Board of Health.

Help Conserve Game
REPORT VIOLATIONS

To report a violation of the game laws, call North Carolina Wildlife Resources Commission at one of the following locations:

Location	Area Code	Telephone
Edenton	919	482-2895
Washington	919	946-4744
Burgaw	919	259-4423
Rocky Mount	919	GI 2-4745
Fuquay-Varina	919	552-5028
Elizabethtown	919	862-3826
Burlington	919	228-8523
China Grove-Landis	704	857-9188
Pinebluff	919	281-3568
N. Wilkesboro	919	838-4618
Valdese	704	437-3215
Marion	704	697-7311
Waynesville	704	GL 6-9292
Raleigh	919	829-7191

A Commission radio operator will take your message and immediately relay the information by radio to the nearest wildlife protector. If a long distance call is necessary to reach one of these numbers, place the call collect, and inform the operator that you wish to report a game law violation. If you fail to reach the first number called, try the next nearest location. If you do not have these numbers available, call your Sheriff's or Police Department office.

ADDRESS CHANGE NOTIFICATION

Name_____

Old Address_____

_____

New Address_____

_____

Zip Code_____

IMPORTANT:

Enclose present Address Label

Please notify us promptly of change of address.

Use this blank to subscribe NOW—$.50 a year
$1.00 for two years. No stamps, please

WILDLIFE IN NORTH CAROLINA **New** ☐
P. O. Box 2919, Raleigh, N. C. 27602 **Renewal** ☐

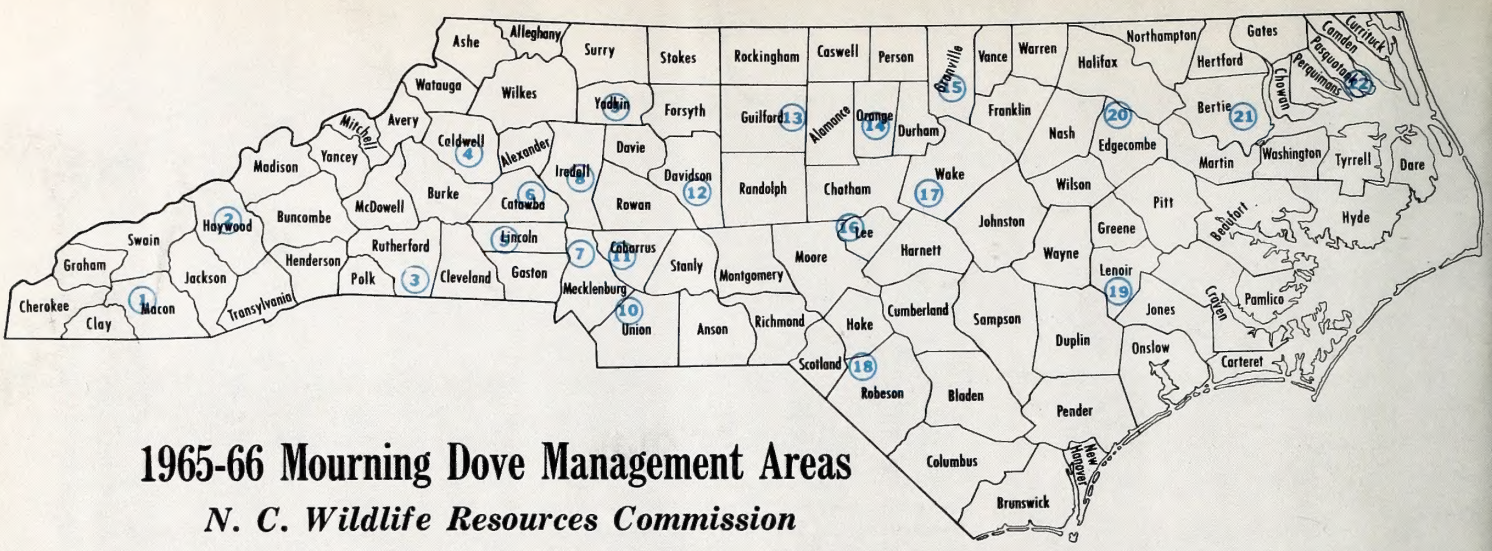
I enclose $_____; send me WILDLIFE IN NORTH CAROLINA for_____years starting with the earliest possible issue.

Name_____

Street or Route_____

City_____ State_____ Zip Code_____

Please notify us promptly of change in address
If renewal, please send in address label.



1965-66 Mourning Dove Management Areas

N. C. Wildlife Resources Commission

1. MACON COUNTY — The W. C. Burrell Farm, comprising approximately 400 acres of land, five miles northwest of the Town of Franklin on county road No. 1372 (Burning Town Road) at intersection with county road No. 1379.

2. HAYWOOD COUNTY—The North Carolina Agriculture Experiment Station, comprising 355 acres of land, approximately one mile east of the Town of Waynesville, between U. S. Highways Nos. 19A and 23, and N. C. Highway No. 276, on county road No. 1810.

3. RUTHERFORD COUNTY — The Wilbur H. Hayes Farm, comprising 700 acres of land approximately 2.5 miles south of the Town of Harris on county road No. 1115.

4. CALDWELL COUNTY — The Ted A. Poovey and Raider Kiziah Farms, comprising 350 acres of land approximately four miles northeast of the Town of Granite Falls on county roads Nos. 1745 and 1002.

5. LINCOLN COUNTY—The Charles Anthony Farm, comprising 59 acres, four miles north of the Town of Cherryville off N. C. Highway No. 274 on county road No. 1159, ten miles west of Lincolnton.

6. CATAWBA COUNTY—The Francis R. Sigman Farm, comprising 210 acres of land approximately six miles northeast of the Town of Newton and 2.5 miles south of the Town of Claremont on county road No. 1722.

7. MECKLENBURG COUNTY—The lands owned by the County of Mecklenburg, comprising 100 acres in Huntersville Township, approximately twelve miles north of the City of Charlotte on U. S. Highway No. 21, on the east side of the highway.

8. IREDELL COUNTY — The James Farms, Inc., comprising 475 acres of land, approximately one mile northeast of the City of Statesville on Oakdale Circle (county road No. 2322) which turns off old U. S. Highway No. 64 near its intersection with Highway I-40.

9. YADKIN COUNTY — The Elm Grove Farm owned by Mrs. Fannie S. Doub, comprising 380 acres situated in the Forbush Township, approximately 19 miles west of the City of Winston-Salem and approximately 10 miles east of the Town of Yadkinville, near the Baltimore Methodist Church, three miles north of U. S. Highway No. 421. Tract No. 1 is located approximately one mile northwest of the Baltimore Methodist Church on county road No. 1570. Tract No. 2 is located approximately one-half mile north of the Baltimore Methodist Church on county road No. 1573.

10. UNION COUNTY—The lands of Leston Hilton, comprising 200 acres in Monroe Township, approximately twelve miles east of the City of Charlotte on Old U. S. Highway No. 74 (Monroe Road) to Sun Valley High School; go right on county road No. 1377 about one-half mile to county road No. 1353; turn left, and the farm is on both sides of the road.

11. CABARRUS COUNTY—The lands of Jiles Garmon and C. L. Fink, comprising 205 acres, located six miles east of the City of Concord on N. C. Highway No. 73; turn right on county road No. 2630 and the dove area is one-half mile on the left.

12. DAVIDSON COUNTY—The J. C. and Reece Crouse Farm, comprising 182 acres of land in Emmons Township, approximately six miles north of the Town of Denton on N. C. Highway No. 109 to Cid Road (county road No. 2318), then east approximately two miles to the farm on the north side of Cid Road.

13. GUILFORD COUNTY—The Guilford County Farm owned by the County of Guilford, comprising 756 acres of land approximately ten miles northeast of the City of Greensboro, and two miles north of the Town of Gibsonville on county road No. 2740.

14. ORANGE COUNTY — The Frank Perry Farm, comprising 400 acres of land, approximately three miles north of the Town of Hillsboro, between U. S. Highway No. 70 and N. C. Highway No. 86, on county road No. 1306.

15. GRANVILLE COUNTY — The E. B. Averette Farm, comprising 400 acres of land, approximately six miles south of the Town of Oxford, between U. S. Highway No. 15 and N. C. Highway No. 96, on county road No. 1618.

16. LEE COUNTY — The T. W. Poe Farm, comprising 400 acres, eight miles northwest of the City of Sanford on N. C. Highway No. 42.

17. WAKE COUNTY—The J. H. Aiken Farm, comprising approximately 450 acres of land, 15 miles southwest of the City of Raleigh, and two miles north of the Town of Fuquay-Varina near Needmore on county road No. 1399.

18. ROBESON COUNTY — The Humphrey Brothers Dairy Farm, comprising approximately 400 acres, two miles northwest of the Town of Shannon which is between Red Springs and Lumber Bridge on N. C. Highway No. 71.

19. LENOIR COUNTY — The C. N. Stroud Farm, comprising 200 acres of land, approximately eight miles southwest of the City of Kinston on N. C. Highway No. 11, and one mile west of the Community of Albritton.

20. EDGECOMBE COUNTY — The Bill Dail Farm, comprising 600 acres of land, four miles east of the Town of Leggett on N. C. Highway No. 97 and one mile south on county road No. 1500.

21. BERTIE COUNTY — The James Delbert Evans Farm, comprising 130 acres of land, nine miles south of the Town of Colerain on N. C. Highway No. 45, one mile west on county road No. 1355, and .7 mile south on Pierce Road.

22. PASQUOTANK COUNTY — The A. B. Etheridge Farm, comprising 180 acres of land approximately 3 miles west of the City of Elizabeth City on Bodie Road (county road No. 1133) at the intersection of county road No. 1144, near the Old Municipal Airport.

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North Carolina State Library
Raleigh

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Wildlife IN NORTH CAROLINA

OCTOBER, 1965

KARL MASLOWSKI

Evening Meal

A common grackle is on the menu of this male mink for tonight. This sleek furbearer will eat most any meat, with crayfish, small mammals, turtles and fish, high on the list. It is often considered an enemy of poultry, perhaps with some justification. But he certainly isn't all bad.

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Although it isn't exactly a fall background in which we find our cover subject this month, we felt you might like to see Oliver the Owl in color. This is the way he posed for Dave Brinning (see story page 8) last summer. The beak and talons are every bit as businesslike as they appear and the great horned owl knows how to use them. He's neither saint nor sinner, but perhaps a little of both.

Striped Bass

by Luther Partin
Photos by the Author

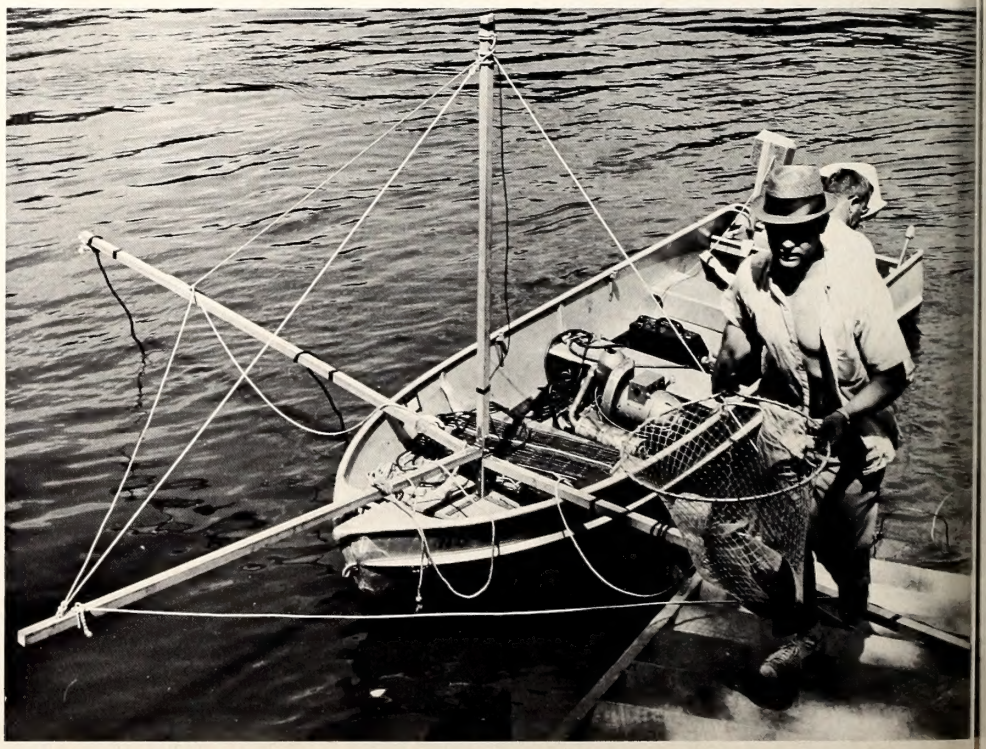
THE Wildlife Commission's striped bass program made significant progress in the past year. Buford (Red) Tatum, fish management supervisor for the Division of Inland Fisheries, supervised experiments that opened doors to new egg sources and greatly expanded the facilities for hatching striper eggs. A scientific "first" was achieved in the holding of adult striped bass in aquaria, stripping them of eggs and sperm at the proper time and returning them to the water good as new. Experiments were also carried out in transporting fertilized eggs in plastic bags fortified with pure oxygen. They demonstrated that eggs 12 or more hours old can be safely transported at least six hours without noticeable loss in hatching.

These successful efforts are part of a long-range program to develop the full potential of the striped bass for inland water sport fishing. The question of which water bodies furnish suitable habitat has yet to be resolved. It will take some time to determine how many of our present and future impoundments will support fishable populations of this great sporting fish, perhaps better known as the "rockfish" or just plain "rock."

A problem of even more immediate concern is the development of management techniques to produce "advanced" rockfish fingerlings (fish larger than three inches). Stockings so far have been accomplished either with adults or with sac fry (one to two days old). Getting sufficient numbers of adults is extremely difficult and expensive. It appears sac fry have a very low survival rate. Advanced fingerlings may be the best bet; however, fry and egg stocking may become practical. Experiments are now in progress to grow fingerlings, but as in most research, new problems are more common than answers. Rockfish are an extremely difficult fish to handle in captivity. They seem to be very sensitive to change. The fry may be destroyed by phantom midge larva or some other form of predation may leave only a few survivors. Some of the work has been successful, however, producing fingerlings up to three inches long in less than two months. The growth rate is amazing. Fishery biologists hope to get enough information from these studies to enable them to economically produce striped bass fingerlings on a large scale for experimental stocking in suitable Tarheel rivers and lakes.

The successful live-holding of adult rockfish last spring was accomplished with fish from two separate areas, Albemarle Sound and the Weldon section of the Roanoke River. The Albemarle fish were purchased from commercial fishermen and transported by tank truck to the Commission's warm-water fish hatchery at Fayetteville. This, in itself, was a major accomplishment. But even more important, the Fayetteville operation opened up a new era in rockfish fry production. It showed that the hatching process is not limited geographically. The Fayetteville hatchery used fish that were headed for the frying pan, but instead were transported 150 miles to produce fry. The potential revealed in this experiment is tremendous, and should be of great value to fish management interests everywhere. The Weldon fish were obtained through the use of an electrical device that enabled Commission workers to capture the fish alive, without harming them, and take them to a nearby hatchery.

Both operations were success-



"The shocker" is a generator-equipped work boat which is used to collect the stripers. Here, a big one is rushed in.

ful in producing fry that would not have been available for experimental stocking otherwise. Hormone injections and tranquilizers were employed as new and untried fish management tools to develop techniques and methods that will, with a few modifications and refinements, be the base for an expanded program next year. More about the two operations later, but first some background on the past history of rockfish fry production.

A striped bass hatchery has been in operation at Weldon since 1892, the only one in the world until South Carolina got into the business a few years ago. Heretofore, the Weldon hatchery operation has been dependent on eggs from ripe females caught by fishermen near the hatchery, as the rockfish reached the end of their long spawning run up the river from Albemarle Sound. The fishermen are paid $20.00 per million eggs, with the average female containing about 300,000 eggs.

The ovaries bearing the eggs are cut out of the live female fish and the eggs are fertilized immediately with sperm squeezed from a live male rockfish. If the female fish is dead on arrival, or if the eggs are green, or if no live male striper is available, the eggs are lost. The female is lost to further reproduction in any case.

The limitations of this setup are obvious. Most of the ripe females come in a short span of time. Once the hatching jars are full, no more eggs can be handled for about two days. By this time the peak run may be over, with only a dribble of fish coming in the rest of the season.

Hence the study to find ways to keep the rockfish in aquaria, thus assuring a larger production of fry and more efficient use of hatchery equipment. To more fully exploit the benefits of the technique, methods and equipment were devised to assure a sustained supply of fish. Biologist Jack Bayless was largely responsible for outfitting a boat with an array of equipment to capture live fish that proved to be very successful. It was immediately and appropriately labelled, "The Shocker," because of its ability to temporarily stun fish in a small area.

Despite the ominous sounding name and perhaps frightening appearance to a few who have seen it in operation on deserted stretches of river in the wee hours of the morning, the "Shocker" is an indispensable part of a progressive fish management program aimed at developing more of the great potential of the amazingly versatile rockfish.

To describe it briefly, a gasoline engine-powered A. C. generator develops a current of 4 to 6 amperes. Two wooden arms are hinged at right angles to the boat to support four electrodes, two positive and two negative. They drop into the water to form an electrical field 10 to 15 feet long when the generator is running and the circuit is closed. Only the water between the electrodes and for a distance of about two feet around each electrode is charged when the current is on. The electricity temporarily stuns most fish in a band of water not over 15 feet long and four feet wide.

This operation is carried out late at night when there are practically no fishermen on the river. The affected fish rise almost immediately to the surface where they are captured with long dip nets from a pick-up boat following close behind. Both boats are well-equipped with lights to spot

A female rockfish receives a hormone injection to speed egg development before the fish is placed in an aquarium for holding. Eggs will be taken soon.

the fish. If not picked up, the fish recover in a few moments and swim away.

The netted fish are placed in a large tub of water containing a tranquilizing solution. The tranquilizer, quinaldine, calms the excitable rockfish, preventing possible injury from thrashing around. The calming action also prevents the buildup of lethal quantities of lactic acid that seems to be one of the major obstacles to keeping rockfish in captivity.

The fish are carried quickly to the hatchery for examination. The roe (female fish) are checked to determine the stage of egg development, and any roe or bucks (male fish) that have already spawned are returned to the river. The fish quickly recover from the effects of their capture after being placed in the aquaria equipped with fresh water and oxygen. Roe are given a hormone injection that speeds up ovulation. Bucks that are not spent are kept in separate aquaria until they are needed.

Since the eggs hatch in about two days, a schedule can be worked out that, in conjunction with ripe roe brought in by fishermen, will make maximum use of hatchery facilities. This is a great improvement over the hectic night-and-day rush, followed by slack periods of no fish, when the operation was totally dependent upon ripe roe caught by fishermen. Under the new setup it is hoped that if a fisherman brings in a green roe that has been properly handled, it can be kept alive until ripe and then stripped of its eggs. The fishermen could then pick up the fish at his convenience and still be assured of getting his money for the eggs.

The roe in the aquaria are checked a few hours before the calculated time for them to be ripe. Egg samples are extracted and examined microscopically. Only the trained eye can determine when the eggs should be fertilized.

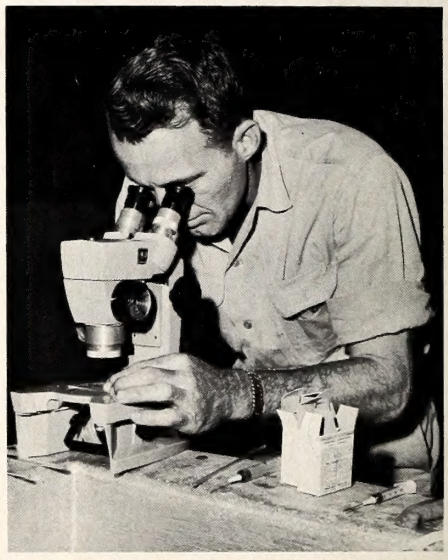
Once it is established that a roe is ripe, the hatchery workers have only a short time to complete the fertilization. The roe is carefully taken from the aquarium in a dip net and a tranquilizer solution is sprayed over her gills. This relaxes the whole body and the eggs can be gently squeezed out into a large pan, ready for fertilization.

Egg samples are carefully taken from the quieted fish to determine the best time for stripping and fertilization.

Sperm from a buck is immediately squeezed into the pan and mixed thoroughly. The sperm must be added within 30 seconds for maximum fertilization. From this point on, the incubation process is the same as in the past. The eggs are hatched in jars, the fry swim to the top and out of the drain into an aquarium. From here they are placed in large plastic bags of water fortified with pure oxygen and distributed for stocking.

The operation at Fayetteville was carried out in the same manner as Weldon, once the fish arrived at the hatchery. Several conditions were different, though, in that the fish were not native to the hatchery water and it was earlier in the season, making it more difficult to find bucks that were ready to spawn.

The Fayetteville experiment was successful in producing fry, however, and proved to be particularly valuable as a salvage operation. That is, it utilized a source of fish whose reproductive potential otherwise would have been lost. It also extended the length of time for rockfish fry production, as the roe can be caught as they begin to congregate in the Sound to begin the upstream run, instead of having to wait for the fish to arrive at Weldon sometime later.



The extracted eggs are examined microscopically and a precise time schedule is worked out by trained biologists.

It also considerably increased the amount of facilities that can be devoted to rockfish fry production, since prior to the development of the techniques for transporting and holding rockfish, only the Weldon hatchery

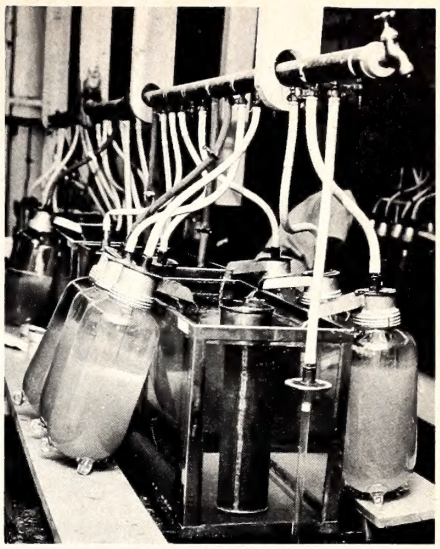
could be used. The success and experience gained this year will have great impact on rockfish management in the future.

The striped bass is an important fresh water game fish throughout most of the South and shows great promise as a biological control in some lakes to reduce the overpopulations of certain forage species such as gizzard shad. Just a few years ago the average angler only knew of the rock as a fish of the oceans and sounds that came up certain rivers to spawn in the spring.

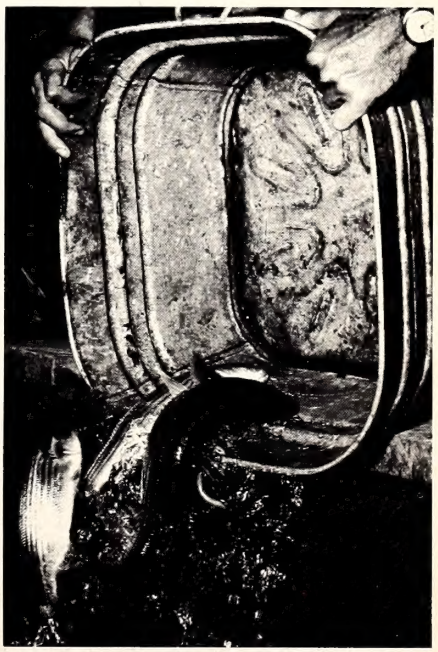
More recently the landlocked striper populations of Kerr and Santee Cooper Reservoirs have proven that this remarkable fish can perpetuate itself in large, fresh water impoundments with tributary streams suitable for spawning. Fishermen have learned a great deal about catching this hard-hitting fighter all through the year instead of just during spawning. Large specimens are frequently being caught in the impoundments, sometimes ranging up to 25 or 30 pounds.

Small wonder then that many other states are highly interested in this versatile and desirable game fish. Dams that keep the rock from reaching suitable spawning waters and pollution that kills eggs, fry and adult fish have reduced natural reproduction to a fraction of the former level.

The successful experiments of the Wildlife Commisison's fish management workers may point the way to restoring rockfish runs in streams where they were once plentiful and introducing this great game fish to new Tarheel waters that have suitable habitat. ◆



Ripe eggs are stripped from the female fish (left) and are fertilized. They are then placed in hatching jars. Fry shipment (below) is in plastic bags.



Back to the river they go. Many of the striped bass used in egg-gathering are returned unharmed to their native waters.

Oliver the Owl

by David Brinning
Photos by the author

OLIVER is a great horned owl. He is a kind of bird which is a veritable tiger of the air, with eyes as keen as an eagle's, both day and night; he is intelligent, wild, wary, exceedingly cautious, the ultimate in fierceness and sagacity among North American birds of prey, even far exceeding the bald eagle in fearlessness and in the defense of its nest.

Oliver and I met shortly after what was apparently his first encounter with man, in rural Mecklenburg County, where he was wounded by a so-called sportsman hunter. This man boasted of downing a big bird, but had no idea of the kind of bird he shot, or whether in fact he had actually more than merely wounded it.

So it was that Phillip Biggs, a fifteen-year-old friend and budding naturalist, and I set out early the next morning to find the "big bird," either dead or wounded, in the area designated by the "sportsman hunter." The first day was fruitless, but near the end of the second day we sighted something on a stump 200 yards off. Though it blended well with the ash color of the stump, it was clear to both of us that we had sighted a great horned owl.

Crouching low, Phillip advanced to a point 100 yards off when the owl dove from the stump into the surrounding thicket. I signaled to Phillip and together we quietly moved foward with our eyes fixed on the spot where the bird went down. After what seemed to be a long time, we both had moved within 5 yards of the stump from different directions. Suddenly, I heard a loud hissing sound. Phillip gave a start and excitedly shouted, "Great Oliver!" This was followed by a snapping of a beak. Phillip had come within a few feet of where the bird was threateningly puffed up on the ground but unable to fly off.

With the enthusiasm of youth conquering better judgment, Phillip reached for the bird. But the owl, dubbed "Oliver" on the spot after Phillip's outcry, wasn't about to give in that easily and Phillip was quickly convinced of this as he jerked his hand back. Oliver had turned on his back with talons up poised for defense. "Here, Phillip, take this glove," I said, offering him the heavy leather glove I had brought along with me. "No, thank you," retorted Phillip. Needless to say, I was on the spot and could do only one thing, reach down and pick up that bundle of fury myself, no matter what second thoughts entered my mind—or run the risk of losing the confidence of my young colleague. That Oliver meant business remained no question in my mind either for as I reached down and picked him up, Oliver clamped down on my gloved hand with his needle-sharp talons, with a vice-like grip that was amazingly powerful, hissing and snapping his beak all the while.

A preliminary examination of Oliver showed his right wing to be injured where some birdshot apparently winged him, but other than this he appeared to be in good shape. As we retraced our steps through the woodland, Oliver seemed to relax his grip a little and settled down on my hand, letting his wings hang down.

Not knowing the full extent of the injury to Oliver's wing, and rather than run a risk perhaps unnecessarily, when we arrived at Phillip's home, I telephoned a friend, Dr. Wharton Gaul. Dr. Gaul is a well-known Charlotte orthopedic surgeon as well as an avid outdoorsman. Dr. Gaul was intrigued and checked to see if he could work a feathered patient into his afternoon schedule.

Oliver puffed threateningly, unable to fly away. The bird flipped over on its back when Phillip reached for him. Oliver settled on the author's arm.

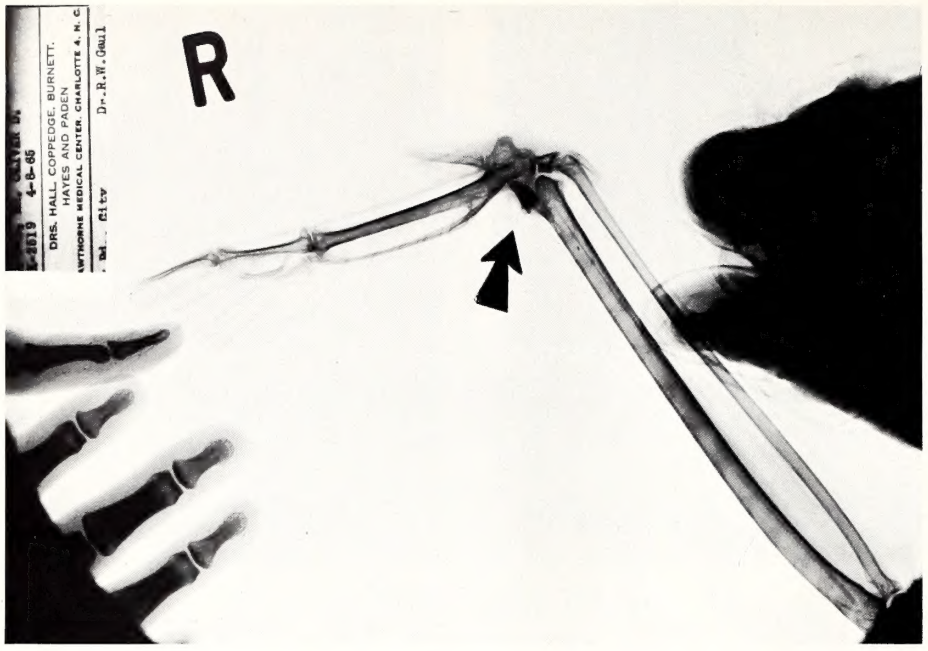
"Bring him in at 4 o'clock and I'll be glad to have a look at the wing and have it X-rayed," offered Dr. Gaul.

Phillip helped drape a piece of burlap around Oliver, just leaving his head exposed. This was to prevent Oliver from getting excited during the trip to the doctor's office and flapping his wings in my face as I drove. Driving a car with one hand and a Great Horned Owl clamped to the other hand isn't an easy task —and it creates quite a spectacle, too, especially when stopped at traffic lights!

Finally we arrived at the Hawthorne Medical Center, the location of Dr. Gaul's offices. Getting out of the car and into the building unseen would be impossible, so I just moved quickly paying no heed to stares or comments. I was able to get an elevator all to myself for the ride to the fourth floor. Fortunately Dr. Gaul's office was right across the hall from the elevator, so Oliver and I moved quickly through the already opened door into an empty waiting room without causing any notice.

Oliver rotated his head in all directions taking everything in with his large yellow eyes. Dr. Gaul had apparently alerted his receptionist because she didn't flick an eyelash when she saw the unusual patient, but merely told me to have a seat. Oliver was undergoing his ordeal in good fashion without any great degree of alarm, as measured by his grip on my hand, when Dr. Paul burst through a door followed by a bevy of young nurses and technicians. Oliver excitedly clamped down on my hand and tried in vain to break loose from the burlap cover which was restraining

Phillip cautiously drapes burlap around Oliver for the trip to the doctor. The owl clamped to the author's gloved hand, beak ready. Right, technician places X-ray film under wing as Oliver is held by the author.



him. Sizing up the situation, Dr. Gaul quieted his assistants, bringing their excited chatter to a hush. I turned, shielding Oliver from the excitement and he calmed down some. Then, following the doctor, we went down a narrow passageway through another door and into the X-ray room. Here, I untied the burlap cover around Oliver and still holding his talons, placed Oliver on his back on the X-ray table.

Then two X-ray technicians took over, quietly and efficiently. With one I held Oliver's wing extended and with the other his talons. One technician slipped the film under Oliver's wing and quietly withdrew behind the screen to the controls. The other technician placed her hand on Oliver's breast to steady him. "Hold it," click. Oliver didn't move a muscle, but only blinked at the electronic flash connected with the camera.

In a few minutes the film was developed and placed up on the X-ray viewer. Dr. Gaul studied it for a moment and then said, "The injury won't need a cast or a splint; however, Oliver should not use his wing for a while and in time he should be all right." Just to be on the safe side, though, Dr. Paul gave Oliver a shot of penicillin to combat any possible infection.

With Dr. Gaul's help, I managed to get the burlap around Oliver again and soon we were out in the fresh air and on our way home.

Home for Oliver was a shed in which Phillip and I placed a 4' x 3' x 3' cage with two large perches which were placed low enough in the cage so that by using his powerful leg muscles, Oliver could jump up to the perches from the cage floor without using his wings.

Now the real work began: Food. Inasmuch as great horned owls—as do other owls—live for the most part on rodents, such as mice and rats, and occasionally on birds and even skunks and snakes, this promised to be a formidable task. However, Phillip volunteered to undertake it. Live bait traps for mice and rats were set. Occasionally we had to resort to the local butcher for beef, or to a local hatchery for cull baby chicks that were going to be done away with anyway when the traps weren't producing enough to maintain Oliver's needs.

Oliver's wing mended rapidly and soon, while perched on my hand, he was able to take to exercising both wings. At this point we converted the shed itself into a cage, placing perches at different levels to make it easier for Oliver to maneuver until his injured wing could bear the full burden of flight.

Phillip helped with all of this; however, he remained a little leery of Oliver and justifiably so. Oliver was still by no means tame and I didn't expect he ever would be, even if we kept him for the rest of his life, which was not in our plans. Oliver, too, seemed to sense Phillip's apprehension for he wouldn't let Phillip come near him without puffing up, hissing and fiercely snapping his beak. With me his greeting was only

X-ray shows suspected area of injury. Opposite lower, Oliver perches on the author's hand, flexing mending wing. Flight is weeks away. (Above) Oliver winked his eye, "I was just having a little fun; I'm not going to bite him." But Phillip isn't at all sure! (Below) Mr. William Anderson places a U. S. Fish and Wildlife Service band on owl's leg. From here on, Oliver is on his own.

somewhat different.

It was not that Oliver liked me any more, but rather I think we both had a healthy respect for each other. I always spoke to him in low tones so as to reassure him that I was calm, unafraid and at ease with him, and that things were as safe as could be for him in his unnatural predicament. This seemed to have a soothing effect on Oliver and he relaxed a little, if nothing more. Nevertheless, he was very wary of all strangers, man and beast.

Phillip decided he wanted his picture taken with Oliver, but declined to let Oliver sit on his fist. So I put Oliver on a perch and told Phillip to stand behind the bird. However, to tie him into the picture better, I suggested that Phillip put his hand on the end of the perch. Cautiously, Phillip placed his hand on the perch but stood a good bit off from Oliver. "Move in closer to Oliver," I said, and at that instant, as though he understood what I said, Oliver turned to Phillip, snapping his beak a few times. As Phillip moved in closer and I spoke softly to Oliver, Oliver turned toward me and winked one of his large yellow eyes, as if to say, "I was just having a little fun; I'm not going to bite him."

According to recognized experts on birds of prey, almost all captive birds eventually revert back to the wild state after being released. Finding themselves set free, the so-called "drifting away" period begins, the length of which varies, depending on the individual bird to a large degree. Great horned owls are said to be very slow and require several months before they will be able to shift for themselves.

We decided to release Oliver, hoping that he would complete his drifting away period quickly, for our sake as well as his, for we had begun to grow fond of Oliver and really hated in one way to see him go. But, on the other hand, it wasn't fair to keep him captive any longer.

Normally, were there resident horned owls in the neighborhood, they would probably drive Oliver away the moment he left the yard because horned owls are most selfish about sharing their domain and defend their right with fury and determination. However, inasmuch as the loud clear "Hoot-Hoot-Hoot-Hoooo" that Oliver sounded off with nightly went for the most part unanswered, we felt this would not be a problem.

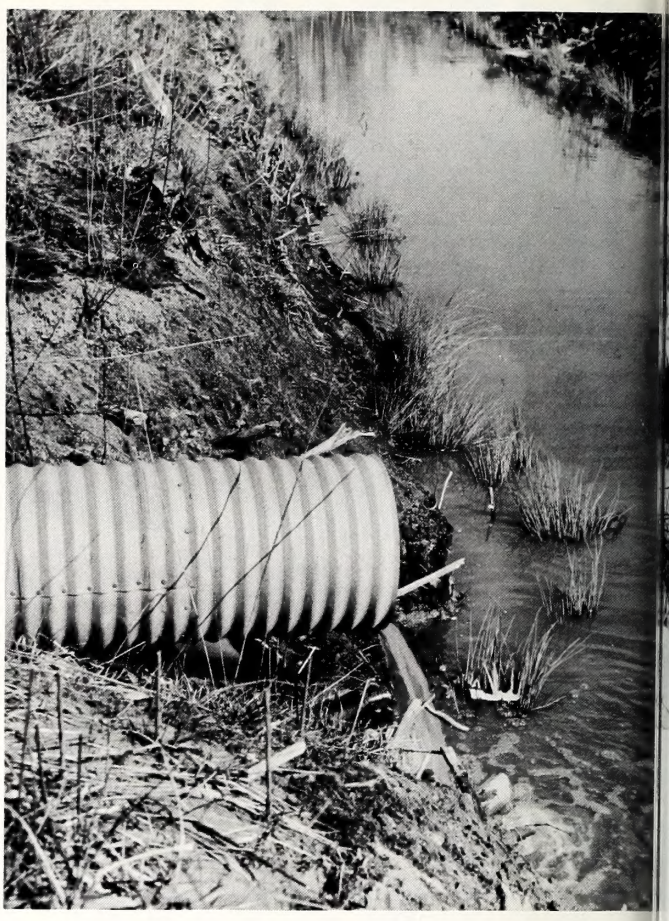
Before Oliver was released on Mr. William Anderson's property, Mr. Anderson placed a U. S. Fish & Wildlife band around one of Oliver's legs which bore the No. 49852352, so we could possibly learn where Oliver imigrated to after he left.

Thus it was that I took Oliver on my hand one evening, stroked his feathers for a moment and spoke to him softly. It may have been my imagination, but he seemed to sense his forthcoming freedom. When I cast him off, Oliver flew straight into the denseness of the woods behind the shed that had been his home for almost two months.

Oliver must have found plenty to eat because only once did we see him again, and then for only an instant. Occasionally after that, we would hear him hooting in the distance, but this connection, too, has now ended.

In conclusion, Phillip and I are in accord that the great horned owl is neither a feathered friend, nor a feathered fiend, but is truly a bird of magnificent bearing, one most deserving of man's respect and protection. ▲

The above photo shows a wetland area with the water released through exposed pipe. Normal water level has been restored (below) by capping surface inlet pipe.



Operation Wetlands

by J. B. Litchfield
Work Unit Conservationist
Northampton County

Charles B. Woodhouse
Biologist, Wildlife Resources Comm.

SOME of the small watershed protection and flood prevention projects constructed under P.L. 566 resulted in the removal of most of the surface water from the adjacent swamps. This fact has caused some controversy between various conservation interests about the effect of such complete drainage on certain wildlife species. The removal of the surface water in these swamps certainly eliminates some good waterfowl habitat and "escape water" areas for deer and other species being pursued by dogs.

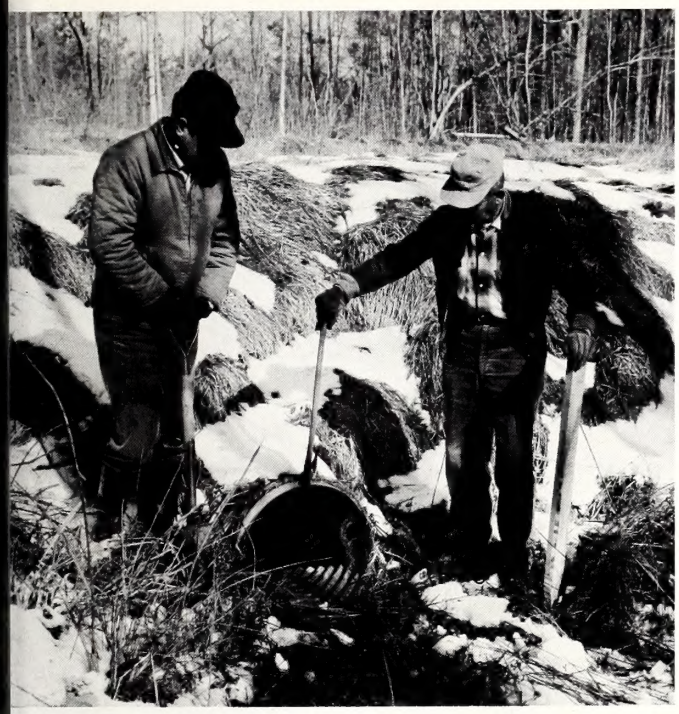
In the Cutawhiskie Creek Watershed Project, Northampton and Hertford Soil and Water Conservation Districts, construction of channel improvement was completed in the fall of 1963. In the winter of 1964, a study was initiated to observe the effects of retaining water behind the spoilbanks on Cutawhiskie Creek. This was a cooperative study between the USDA Soil Conservation Service and the Wildlife Resources Commission. The area selected for study was in Northampton County, between N. C. Hwy #35 and Lateral #14. The study was agreed to by the Drainage District, then it was explained to the landowners involved, and they agreed to cooperate by allowing their swamp lands to be flooded during the winter months.

Gates were constructed by using three pieces of 1" x 8" rough pine board. These were fastened together with 1" x 3" battens. The gates were placed over the end of the surface inlet pipes on the swamp side. These did not cut off the flow of water completely, but did reduce the volume to a minimum.

Five of the surface inlets were closed in February. When the gates were removed on March 15 there was from two to four feet of water backed up in the swamps behind the spoilbanks.

This appears to be a crude but effective method of retaining water in the swamps during the winter months. An important observation is that there was no apparent adverse effect on adjacent farm lands. The only areas flooded were the lowlands near the main stream. Further observations should give an opportunity to evaluate the effectiveness of this practice. It is planned to install these gates again this October and leave them until the following March.

It should be noted here that this practice is in the trial stage and is subject to change to fit changing conditions. Also, this is designed to find an answer to a problem that exists in certain watersheds already in operation. It is hoped that information gained here will aid in designing future projects so that valuable wildlife habitat can be preserved, while at the same time accomplishing necessary flood protection and drainage.



PHOTOS: U.S.D.A.
SOIL CONSERVATION SERVICE

The surface inlet pipe draining the wetland is examined by S. C. S. Technician H. R. Bryant (left) and Biologist Woodhouse. Closing structure is placed over pipe end.

Bird Down

by Duane Raver

EVER since the dove season opened at noon September 11, the gray game birds have been falling steadily and it looks like a pretty fair year for the dove hunter. Of course the doves might have a slightly different opinion, but hunting regulations carefully worked out by Wildlife Commission and U. S. Fish and Wildlife Service biologists insure plenty of brood stock for next year's crop of doves.

But there's another bird that shares the mourning dove's dangerous way of life during the split gunning season: the homing or racing pigeon. Few of us ever see carrier or racing pigeons in flight or at least we wouldn't recognize one winging its way almost on a bee line to a prearranged destination. Since they have many of the physical features of common farmyard pigeons, identification is extremely difficult except to the expert.

Any gray bird (or even one with a few bluish or white markings) that comes sailing over the head of the dove hunter hasn't much of a chance if the gunner is any sort of a shot. Remember the times that you've looked twice at songbirds that scooted across the dove field, before you lowered the gun? And certainly a pigeon is fair game, too, you say. But what if the bird folded at your feet is worth a couple of hundred dollars?

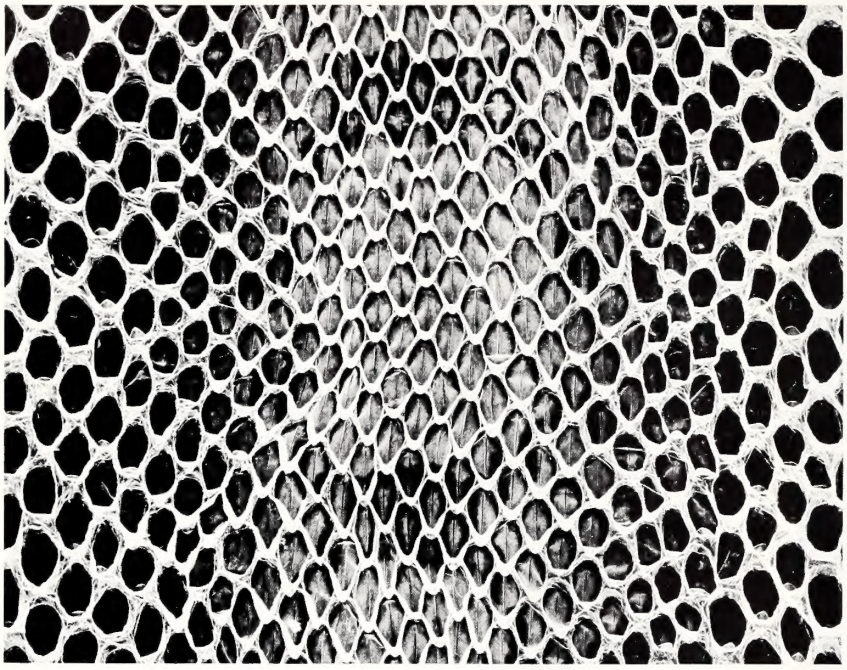
Few records of hunter-killed carrier and racing pigeons are on the books, but very likely the leg-banded birds simply are forgotten as soon as possible and never mentioned.

Birds other than doves are killed during the season purely by accident; but a moment's additional scrutiny will reveal a pigeon's identity. Since we have no way of telling whether it's a valuable pigeon, let's pass up the urge to bring it down. Remember, we're *dove* hunting.

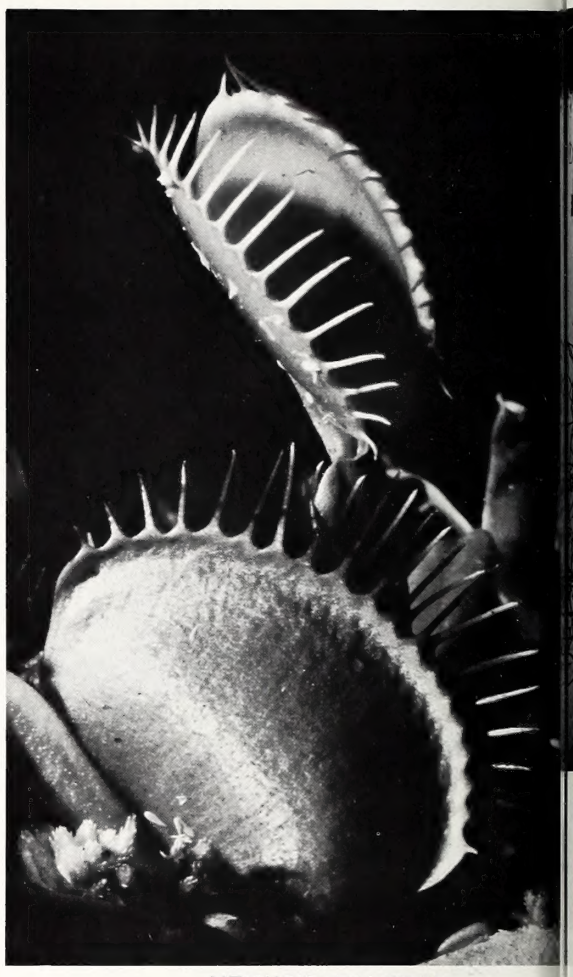
The history of carrier and racing pigeons is almost as fantastic as it is fascinating. And the tedious training necessary, the hours of time and endless patience may end up wasted in a stubble field. The natural tendencies of these powerful flyers must be channeled in the right direction. The homing instincts are there, but they must be refined. Speed for racing must be discovered and then developed. Endurance and perseverance may come naturally to some of these staunch birds, but it takes expert handling to bring them out.

Top-flight racers and homers bring several hundred dollars a pair. Many have illustrious war records. The 1306th Signal Pigeon Company was organized March 12, 1943, and operated out of Pope Air Field near Fort Bragg, North Carolina, and was the first pigeon group assigned to the Army Air Force. The birds served on many battle fronts including North Africa.

Of course this history has little bearing on the shooting of present day racers and homers. But it does point up that some pigeons are far more than simply targets for careless or thoughtless hunters. Next time you see a pigeon coming your way, let it go by; its destination may be New York City. ⬍

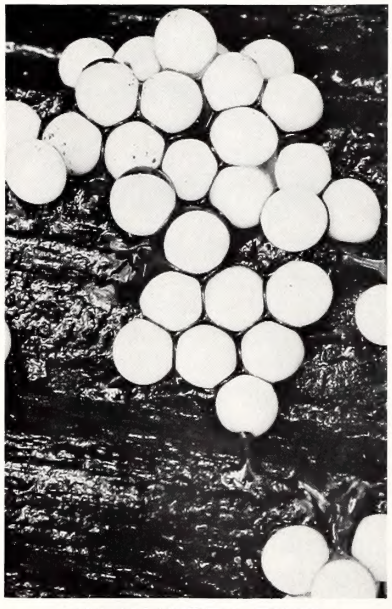


PINE SNAKE SKIN



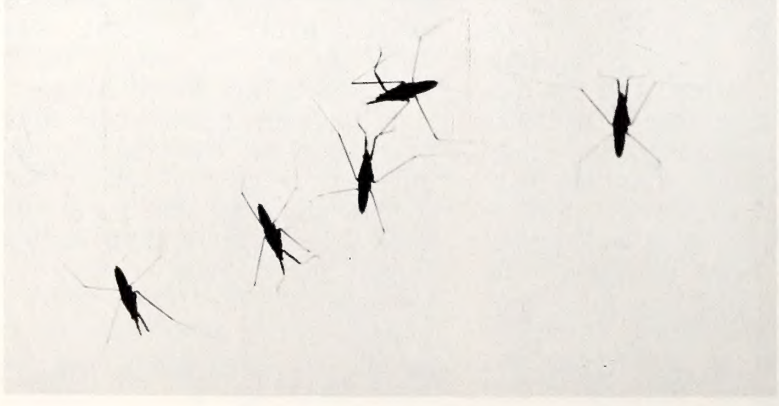
VENUS'S—FLYTRAP

PUFFBALLS



SALAMANDER EGGS

WATER STRIDERS

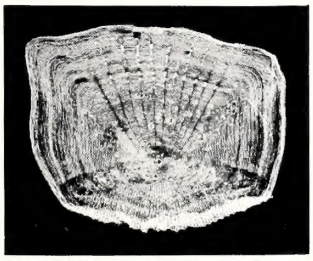


WATER REFLECTIONS

Forms in Nature

MOCKING BIRD

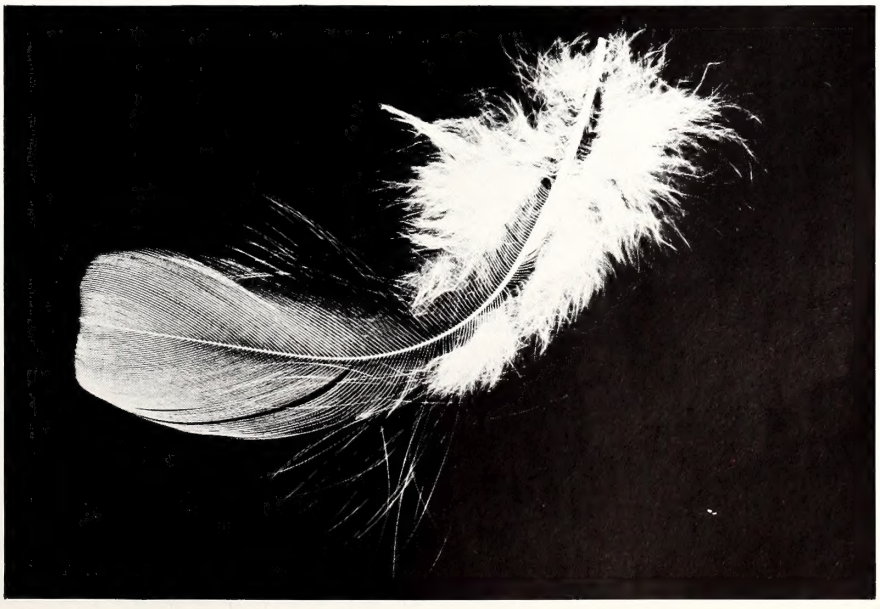
FERN



WHITE PERCH SCALE

Nature displays her handiwork in various shapes and forms—some simple, some minutely detailed, but always pleasing in design. Here are but a few in the endless display.

DUCK FEATHER



A Good Beginning

by Lunette Barber

MANY of the Soil and Water Conservationists of North Carolina think that education is the way to begin interest in conservation of natural resources. In several Soil and Water Conservation Districts of the state, poster and essay contests are sponsored in the elementary grades of the public schools by the local conservationists and the district supervisors, who are often assisted by local civic groups and Chambers of Commerce.

Following are districts participating: Albemarle Soil and Water Conservation District, which includes Camden, Currituck, Chowan, Pasquotank, and Perquimans counties; it sponsors a poster contest and an annual woodland clinic for FFA boys within the district.

Guilford SWC district supplies the booklet entitled, *"Story of the Land,"* which is published by the Soil Society of America,* to all sixth grade pupils in the county. Essays are written by the pupils based on this and other information. The district gives a first prize of a $50 savings bond; second prize of a $25 savings bond, and third prize of $10.

Davie SWC district, in cooperation with the County School Superintendent, unit courses are taught in the sixth grades of 16 rural schools to approximately 1015 pupils. Following this instruction, pupils are required to write essays on the subject, "Conserving the Soil that Feeds Us." The top three essays in each school, as selected by the teachers, are presented to the Davidson SWC district supervisors, who then select the top three for the district. A total of $50 in prize money is awarded the winner.

Lenoir SWC district assisted the Kinston Junior Woman's Club in a poster contest in one of the schools. Plans are to extend this project to the other schools in the future. Sixty posters were entered last year. The winning posters were displayed in store windows in downtown Kinston.

Poster contests are sponsored by Johnston, Vance, and Lincoln SWC districts.

Essay contests are sponsored in Iredell, Mitchell, Wilkes, and Chatham SWC districts.

The educational work done through the poster and essay contests is supplemented with field trips which show proof of the many facts the children have learned in the classrooms during the entire projects. Representatives from other agencies, especially the Forest Service and Wildlife Resources Commision, assist with the field trips.

Another helping hand is given by the Soil Conservationists to the 4-H Club members who participate in Soil and Water Conservation Demonstrations annually; especially do they get the latest and best publications for the youngsters and give technical advice. Judging in each district through the state is done by these men also.

All who are doing conservation educational work in the public schools are to be commended highly for their efforts. They believe in it because they are dedicated in their profession. Much of the work is done beyond the line of duty and after required working hours. Included in the challenge are telephone calls, meetings, field trips, judging, exhibit arrangements, and banquets, plus securing assistance from the other agencies above mentioned.

After all, it should be realized that the youth of today will soon be paying the bills and doing the work needed for conservation of natural resources of our nation. Money, time and work are the tools needed, and much of the work includes education from kindergarten to the research laboratory. A good beginning place is the secondary schools, so the conservationists believe.

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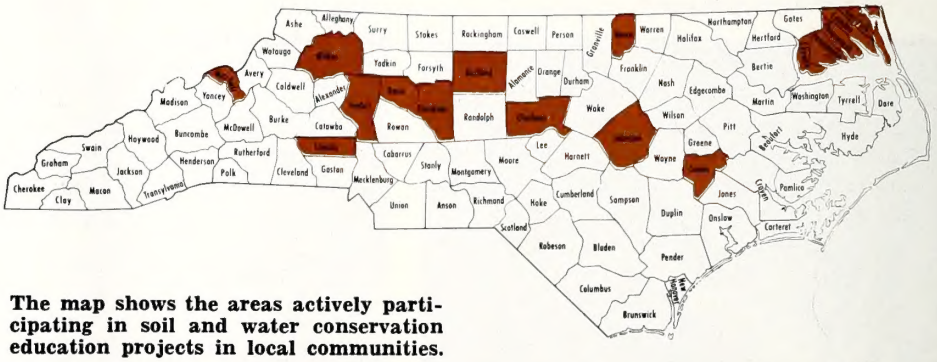
* Story of the Land" may be bought from: The Soil Society of America, Ankeny, Iowa.



The map shows the areas actively participating in soil and water conservation education projects in local communities.

U.S.D.A.—SOIL CONSERVATION SERVICE

Here some seventh graders learn about wildlife from District Biologist John Collins.

The Skipper

Conducted by John Parker

THE State Boating Act requires that Class 2, 3, and 4 motorboats carrying passengers for hire, or inboard motorboats with closed construction have aboard one or more fire extinguishers of an approved type. (Check your motorboat guide—these are available from the Wildlife Commission—for more details on this.)

It is usually helpful to discuss equipment, required and optional. However, there is a special reason for bringing up the oftenmentioned subject of fire extinguishers. That reason concerns the above mentioned criteria of outboards with closed construction. If you have been confused about these terms in the past, perhaps the following will serve to clarify this matter.

The Coast Guard has issued new regulations on fire extinguishers and compartment ventilation. Your boat should be equipped with at least one approved extinguisher if it fits any one of the following categories: (1) closed compartments under thwarts and seats where portable fuel tanks may be stored. (2) Double bottoms not sealed to the hull or not completely filled with flotation material. (3) Closed living space. (4) Closed storage comparements in which combustible or flammable materials are stowed, and (5) permanently installed fuel tanks. Exempted are bait wells, glove compartments and ice chests.

The above in no way deletes other criteria. It is simply to define closed construction on small craft. The ventilation regulation calls for at least two ventilators with cowls for removal of gases from the bilges of every engine and fuel compartment.

The Wildlife Resources Commission has adopted this new wording and protectors will enforce the fire extinguisher provision of the boating act accordingly. It is hoped that this new wording serves to clarify the situation. However, remember that the best policy is to carry a fire extinguisher aboard all motor-driven boats. After all, gasoline from the tank of a three horse motor burns just as efficiently as does gasoline used in a twin engined cruiser!

File a

FLOAT PLAN

FLOAT PLAN

of _____
(name of boat owner)

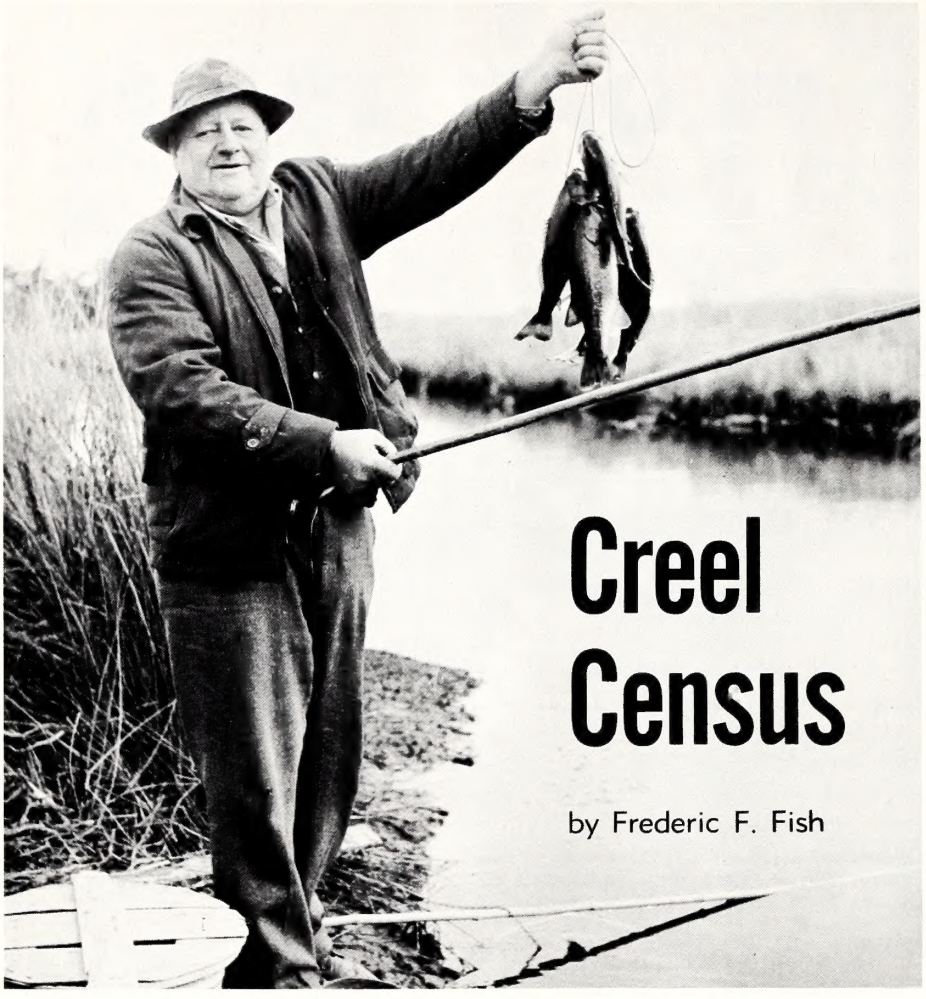
IF TROUBLE OCCURS while you're cruising on your boat, help will come faster if the Coast Guard or other rescue agencies know *where to look for you.* For your safety and your family's peace of mind complete this form—leave it with a responsible person whom you can depend upon to notify authorities if you're overdue.

IF OVERDUE, CONTACT _____
(name, phone number of nearest Coast Guard Rescue Coordination Center or other rescue agency)

BOAT: Name of vessel _____ Length overall _____
Registry number _____ Color of hull _____ *(white hull, blue top, etc.)*
Power _____ *(inboard, outboard, sail)*
Radio aboard _____ *(transmit frequency)* _____ *(receive frequency)*
NUMBER OF PERSONS ABOARD _____
DEPARTURE FROM _____ DATE & TIME DEPART _____
DESTINATION _____ DATE & EST. TIME RETURN _____
ROUTE OR CRUISING PLANS _____

Whenever you head out for a trip on the water, file a "float plan." Shown here is one form which should be completed and left with a responsible person. If trouble comes, and you're overdue, help will find you more easily. Use them.

The basic safety items shown here may never be needed. But they could mean the difference between a safe trip and tragedy. Fire extinguisher, flares, first aid kit and flashlight.



Creel Census

by Frederic F. Fish

This is the first in a series of discussions based on field research of the Division of Inland Fisheries. The Statewide Creel Census discovered interesting and important information.

PICTURE the local supermarket operating on a somewhat different basis than it now does. Instead of paying for your groceries as you check out from each shopping trip all you do is buy a permit for a very nominal sum which says you may help yourself to anything in the store at any time during a calendar year. Shop as often as you like, help yourself to any item that appeals to you, and take as many as fancy dictates with the exception of the hams and the turkeys. One ham costs the store more than the price of your permit so there is a restriction on those—you can only take one at a time, but you can come back as often as you wish.

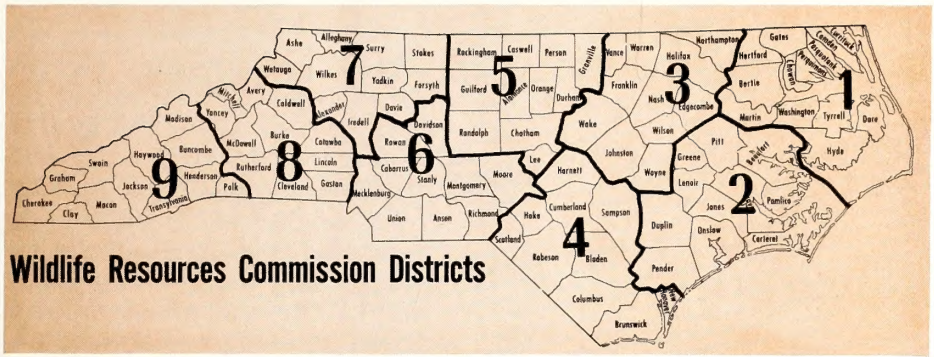
To compound the confusion, if you will do your shopping with a basket instead of a shopping cart you don't have to buy a permit and no one has the foggiest idea how many market-basket shoppers take advantage of that loophole. The store is run pretty much on the basis of telephone calls from irate shoppers complaining that certain shelves are empty.

In a very exaggerated way, North Carolina's inland waters parallel that store and the Wildlife Resources Commission is in the unenviable position of store manager. A fishing license gets the angler in the store for a full year but no one knows what he takes from it during that time. If the angler chooses the "market basket" of natural baits in his county of residence, he needs no license and there isn't even a good guess available how many of them there might be.

The inland waters of North Carolina, covering a vast area somewhere in excess of one-third of a million acres—range in character from the cold swift streams on the mile-high slopes of Mount Mitchell to the warm placid waters of the cypress swamps, and their inhabitants are equally varied. Who fishes these waters and what kinds of fish do they seek? The unknown answers to these, and many other comparable questions not only are of considerable public interest but they are of vital concern to the Wildlife Resources Commission in which is vested complete responsibility for managing the fisheries of the inland waters. Conservation of these natural resources so as to yield the maximum harvest consistent with protection for the future is the Commission's obligation. Carrying through with this obligation implies accurate knowledge of the "fishing public" who foot the bill unassisted as well as their preferences concerning kinds of fish and the means for catching them.

THE Wildlife Resources Commission has been keenly aware of the need for reliable statewide information concerning the harvest and the harvesters of the inland waters. Until very recently, however, the sheer physical job of compiling and analyzing the mountain of data required for meaningful answers precluded undertaking the job. The way was opened a year ago with the acquisition of electronic data processing equipment—perhaps better known as a "punch card system." At long last, the Commission was prepared to answer some very essential fish-management questions.

The basic data required for answering some of those essential questions were obtained for the author through the full and enthusiastic cooperation of the Division of Protection. Starting on April 1, 1964, and extending throughout a full year thereafter, each wildlife protector in the



process of his routine creel and license check also completed a questionnaire on each angler contacted on one day of each week. The protector decided before he started out exactly what section of water he would cover on the weekly angler-sampling day, and then contacted every angler found within that section. To further reduce sampling bias, the angler-sampling day was scheduled on an eight-day cycle so it advanced one day with each succeeding week. As the wildlife protectors have been assigned over the State in accordance with the work load, the sampling was reasonably consistent with fishing pressures. The Statewide Creel Census perforce was a practical approach and no doubt lacked elements of the classic statistically designed sampling problem; nevertheless, the results should be sufficiently representative to provide accurate tools for fisheries management.

A wealth of interesting information was uncovered by the Statewide Creel Census. It appears, for example, that about one-half of all anglers of the public inland waters are not legally required to purchase a fishing license; the crappie is the most popular single fish as judged by the number taken home; the so-called "pan fishes" consitute three-fourths of all fish caught by hook and line from the public inland waters and two-thirds of the "pan fishes" caught are taken by licensed anglers; more anglers fish concurrently with two lines than use a fly rod; and about as many casting rods are used in the inland waters as cane poles.

Much of the information of interest to the fishing public developed by the Statewide Creel Census will be summarized in future issues of "Wildlife in North Carolina". These data generally are compiled on a District basis since wide variations appeared in different parts of the State. The accompanying map may prove useful to the reader in recalling the individual Wildlife Commission District borders.

The author wishes to pay tribute to the wildlife protectors who faithfully carried out the hard day-to-day work of the Statewide Creel Census.

Who foots the bill?

THE Wildlife Resources Commission, the State agency responsible for protecting and managing the fisheries of the public inland waters, derives no revenue at all from the general tax fund. Only those people who buy fishing and hunting licenses support the work of this agency—the State taxpayers as a group contribute not a penny.

Insofar as fishing is concerned, four types of licenses are available to State residents: the Statewide Fishing License; the Statewide Combination License; the County Resident License; and the One-day Fishing Permit. Non-residents may fish under any of three licenses; the Statewide; the Five-day; or the One-day. In combination, these seven categories constitute the "licensed" fishing public and they alone supply the fishermen's financial contribution to the Commission's operations.

North Carolina grants exemption of all license requirements to three groups of anglers: residents who have not passed their sixteenth birthday; landowners fishing from their own property; and State citizens who are fishing within their county of residence with other than artificial baits.

Probably the first question to come to mind, and certainly one vital to the Commission in managing the inland-water fisheries, is just how many anglers are there in one way or another exploiting these waters.

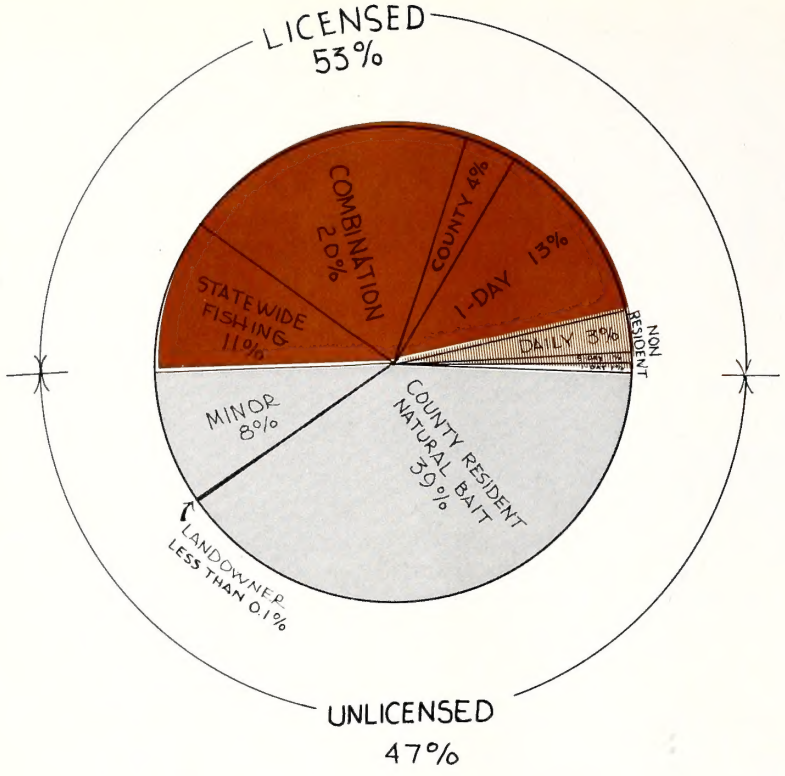
The number of licensed fishermen is easy to determine, for presumably very few people buy a license unless they intend to go fishing. As the number of fishing licenses of each category is a matter of audited record, all one need do is tally up the numbers to arrive at the total number of licensed fishermen. The numbers of fishing licenses sold during calendar year 1964 were:

Resident Fishing Licenses:	
Statewide	82,620
Statewide Combination*	154,318
County Resident	29,071
One-day Resident	99,548
Subtotal, Resident	365,557
Nonresident Fishing Licenses:	
Statewide	4,565
Five-day	8,380
One-day	26,376
Subtotal, Nonresident	39,321
Total, Licenses Fishermen	404,878

The number of unlicensed fishermen of the inland waters is not so easily, and certainly not so accurately, determined. During the Statewide Creel Census, the wildlife protectors did record the type of license, or the type of license exemption as the case might be, for each contact made so the total number of each license category contacted is known. By solving a proportion drawn between the total number of any given type of license contacted during the Census to the known number of that particular license type sold statewide, and the total number of unlicensed anglers contacted to the unknown statewide number of unlicensed anglers, an estimate of the latter number is obtained.

Five estimates were so obtained using statewide, or districtwide, license totals. The five estimates of the total number of legally unlicensed county residents fishing with natural baits

*The combination license is not effective on a calendar-year basis. The number in force during the Statewide Creel Census was estimated from the sales during the Combination License year August 1, 1963 through July 31, 1964.



Almost half of the anglers fishing in North Carolina waters do so, legally, without a fishing license. Here's the breakdown.

PERCENTAGE OF DISTRICT ANGLERS—BY LICENSE CATEGORIES

	Resident Licensed	Non-Resident	Total Licensed	County Res. Nat. Bait	Minors	Total Unlicensed
District 1	61	12	73	23	4	27
2	52	—	52	40	8	48
3	46	1	47	45	8	53
4	30	—	30	63	7	70
5	50	1	51	47	1	48
6	52	—	52	40	8	48
7 (excluding designated trout waters)	60	1	61	34	5	39
7 (designated trout waters only)	73	2	75	18	7	25
8 (excluding designated trout waters)	67	1	68	23	9	32
8 (designated trout waters only)	62	2	64	18	17	35
9 (excluding designated trout waters)	51	11	62	27	11	38
9 (designated trout waters only)	63	4	67	18	14	32
STATEWIDE	48	5	53	39	8	47

averaged 297,825 with a 95 percent confidence limit of 161,251. For all practical purposes, this is saying that the chances are 95 out of 100 that the number of county-resident-natural bait fishermen during the period of the Statewide Creel Census would fall somewhere between 136,574 and 459,076—with 297,825 being the most probable number.

The same method of calculation revealed the statewide number of minors fishing without a license averaged 58,510 with the chances being 95 out of 100 that the number fell between 27,226 and 89,794.

The final category of license exemption, that of the landowner, was contacted so infrequently on the public waters that the resulting data are statistically unreliable—apparently the statewide total is less than 1,000.

Putting all of these data together, it is estimated that there were approximately three-quarters of a million (761,213) anglers fishing the public inland waters of North Carolina during the period of the Statewide Creel Census. The estimated percentage of the total number of anglers represented by the individual license categories is illustrated in the accompanying diagram.

As might be expected, the ratios that developed between the licensed and the unlicensed anglers in the individual districts did not closely parallel the 53:47 obtained on the statewide basis. The license data from the individual districts are summarized in the accompanying table on the basis of the percentage of all anglers contacted in that district.

The tabulated data show quite clearly that the percentage of licensed anglers is proportionately higher in the northeastern and the western districts than in other sections of the state. Most probably this is because these particular regions possess fisheries that attract a greater percentage of the anglers *across county lines* than do the attractions of the extreme southeast, for example, where the proportion of licensed anglers is low. The particular fisheries attributes of Districts 1, 7, 8 and 9 that might attract anglers across county lines superficially appear to be the trout water plus "big waters" such as Currituck Sound, Lake James, Fontana, and Santeetlah Reservoirs. The proportionately higher percentage of nonresident anglers indicated for the designated trout waters, and particularly for District 1 and the warmwater section of District 9, further support this hypothesis for it may be assumed that nonresidents tend to go where the greater attractions exist.

In summary, there are about three-quarters of a million anglers fishing the public inland waters of North Carolina and approximately one-half of these legally fish without a license or any other form of contribution to the protection and perpetuation of the fishery resources. Even in the case of the Designated Public Mountain Trout Waters where the current catch rates can be maintained only at a considerable expense to the licensed fishermen, approximately one-third of all anglers legally fish without a regular license. ◆

NORTH CAROLINA WILDLIFE

RESOURCE-O-GRAM

A ROUNDUP OF THE LATEST WILDLIFE NEWS

Fair Exhibit to Feature Fish

The Wildlife Resources Commission's exhibit at the state fair this year will feature fresh water fish management and have on display in several aquaria some of the more popular species such as bluegills, largemouth bass, crappie and many of the so-called "rough fish."

Waterfowl Seasons Announced

Tarheel waterfowl hunting gets under way at sunrise on November 6 with the opening of the goose season in all but the public waters of Currituck Sound. In this area the goose season will begin on November 20 when the duck season opens. Bag limits for geese are 2 daily, 4 in possession; for ducks 3 daily and 6 in possession.

A bonus daily bag limit of 2 and possession limit of 4 scaup ducks will be permitted in addition to the regular bag and possession limits on ducks in coastal waters designated as commercial fishing waters east of U. S. Highway No. 17, except that this bonus will not be allowed in Core Sound between Drum Inlet and Harkers Island, in Pamlico River upstream and west of a line between Pungo River and Goose Creek, and in Currituck Sound north of U. S. Highway No. 158.

Hearings on Fishing Regulations Set

Three public hearings are scheduled for Mid-October to give Tarheel fresh water anglers a voice in setting the 1966 fishing regulations. Dates for the hearings are: October 12, Asheville; October 13, Salisbury; and October 14, Washington. All hearings are scheduled for 7:30 p.m. at the courthouse in the cities involved.

Trout Fishing Continues Through October

Mountain trout anglers can continue to flip flies into all designated mountain trout fishing streams outside wildlife management areas until October 31. They must, however, use only single-hook artificial lures, and return all fish to the water unharmed except for one trophy-size fish that must be at least 16 inches long. This regulation permits almost a two-month longer season without endangering trout populations. Special trout fishing licenses are required as usual.

by Rod Amundson

"THE meeting was held on the mezzanine of the Sir Walter Hotel (Raleigh, N. C.) March 1, 1945, and convened at 1:30 p.m. Approximately forty-five representatives of their respective communities were present.

"John R. McLaughlin acted as temporary chairman, and John G. Lewis as temporary secretary. Mr. McLaughlin stated that the purpose of the meeting was to perfect the organization of the North Carolina Wildlife Federation and the election of officers being the first matter of business.

"Nominations were called for the office of President. W. H. Entwistle nominated for President Frank L. Page of Greensboro. There was a number of seconds to the nomination. The vote was called and Mr. Page was unanimously elected.

"The office of 1st Vice-President was then acted upon. P. K. Gravely, Rocky Mount, was duly nominated, seconded, and unanimously elected.

"Nominations were called for the office of 2nd Vice-President. D. K. Sing of Charlotte was nominated, duly seconded, and unanimously elected."

Thus the North Carolina Wildlife Federation was born. The foregoing is a direct transcript of the organizational meeting. There had been other meetings prior to this one held in Raleigh more than twenty years ago. A few far-seeing and forward-looking sportsmen had gathered together for the basic purpose of making certain that money spent by hunters and anglers and trappers for license fees would be channeled into a separate agency of state government directly responsible to the people who pay this money.

It was not until 1947 that a law creating such a separate agency was passed. The agency established by the 1947 General Assembly is the Wildlife Resources Commission. Many of the men who gave of their time and energy and money to establish the Wildlife Federation and the Wildlife Resources Commission have passed on. Some of them were men of means; others were not so well endowed. But working together for a common cause they left a heritage that their contemporaries and their successors can never cease to admire, respect and perpetuate.

What is the North Carolina Wildlife Federation? There is reasonable confusion in the minds of many people: the North Carolina Wildlife Resources Commission and the North Carolina Wildlife Federation. The Wildlife Resources Commission is an agency of State Government created by the General Assembly and given a responsibility to "manage, restore, develop, cultivate, conserve, protect, and regulate the wildlife resources of North Carolina . . ."

The North Carolina Wildlife Federation is an independent, incorporated, nonprofit organization of dues-paying sportsmen who believe in and insist upon the conservation and development of all of our state's renewable natural resources. It is affiliated with the National Wildlife Federation.

Perhaps the best possible description of the Wildlife Federation is contained in the preamble to its constitution:

Preamble

"The North Carolina Wildlife Federation, Inc., is hereby solemnly dedicated: to promote the conservation, restoration, management, and proper use of the wildlife and other natural resources of the State of North Carolina; to provide adequate laws to protect these resources and prevent their exploitation; to combine and coordinate the conservation educational activities of all groups of hunters, fishermen, nature lovers, FFA, 4-H, Boy Scouts, Garden Clubs, and also promote a code of ethics in

If you are interested in forming a local club for affiliation with the North Carolina Wildlife Federation, contact Turner Battle, Executive Director, P. O. Box 948, Rocky Mount, North Carolina.

Clyde Patton, Executive Director of the Wildlife Resources Commission has said, "We recognize the desirability and even the necessity of having a strongly organized Wildlife Federation as a complement to the Wildlife Commission. We feel that the efforts of the two organizations do not overlap, and that our program is materially aided by the assistance of a strong state federation."

regard to the wildlife resources which will be acceptable to all groups of citizens of our state and nation; to disseminate literature, motion pictures and other educational materials, and perform such other activities as will promote the interests of this organization; to sponsor educational programs designated to bring about a greater realization of the importance of the wildlife and other natural renewable resources, and to reveal the wholesome recreational advantages of these resources, such as hunting, fishing, camping, boating, swimming, hiking, and nature study; to provide college scholarships for properly chosen boys and girls to study the wildlife resources of North Carolina in a duly accredited college or university within the state; to teach safety methods while in pursuit of these activities and thereby prevent accidents and preserve human life; to promote equality of privilege among all groups who seek enjoyment and recreation in pursuit of the wildlife resources; to cooperate with and coordinate the efforts of all affiliated club members; to promote agreement on sound principles as applied to the conservation of natural resources and to gain the respect of our legislators, our farmers, and other landowners, and to work out a coordinated program with these groups so that the wildlife resources will be given an opportunity to be of maximum benefit to all groups of people; to promote efficient and scientific management of the wildlife and other natural resources; to protect and guard all money obtained from the sale of hunting, fishing, trapping, and fur dealers' licenses and other wildlife funds, and assure their use for the purpose prescribed by law; to see that sound economics is practiced in the use of such funds; to sponsor adequate wildlife laws and protect those which now exist or are hereafter enacted; to guard carefully the Constitution and By-Laws of the North Carolina Wildlife Federation, Inc.; to prevent discriminatory tendencies from entering therein; to oppose any tendency, legislative or otherwise, designed to deprive a law-abiding citizen the right to possess, own, or bear firearms in accord with the Constitution of the United States; to prevent the pollution of now clean streams and to bring about the redemption of polluted streams; to preserve all naturalness possible in the sports of hunting and fishing and related activities and prevent them from becoming diluted with artificialities; to eliminate and prevent any and all tendencies on the part of state and federal governments to establish discriminatory hunting and fishing systems, or to use game and fish funds contributed by all the hunters and fishermen for the benefit of any particular group."

Soon after its organization, and especially during the time the General Assembly was considering legislation to set up the Wildlife Resources Commission, the Federation had a membership of somewhere around 100,000. Guesses vary as to the exact number of members, but there was at least one affiliated wildlife club in each of the state's 100 counties.

Once the Wildlife Commission was created and an active, progressive wildlife conservation program was established, interest waned and membership dwindled to a few thousand members. Present membership now stands at about 11,000 including 3,000 sustaining members who contribute anywhere from $10.00 to $200.00 each year to the Federation treasury. These are business and professional men who wish to support and safeguard our wildlife conservation program, but who can rarely find time to work actively as wildlife club members. The other members belong to 60 active, affiliated clubs. Some 24 other clubs are now in the process of organization and eventual affiliation with the State Federation.

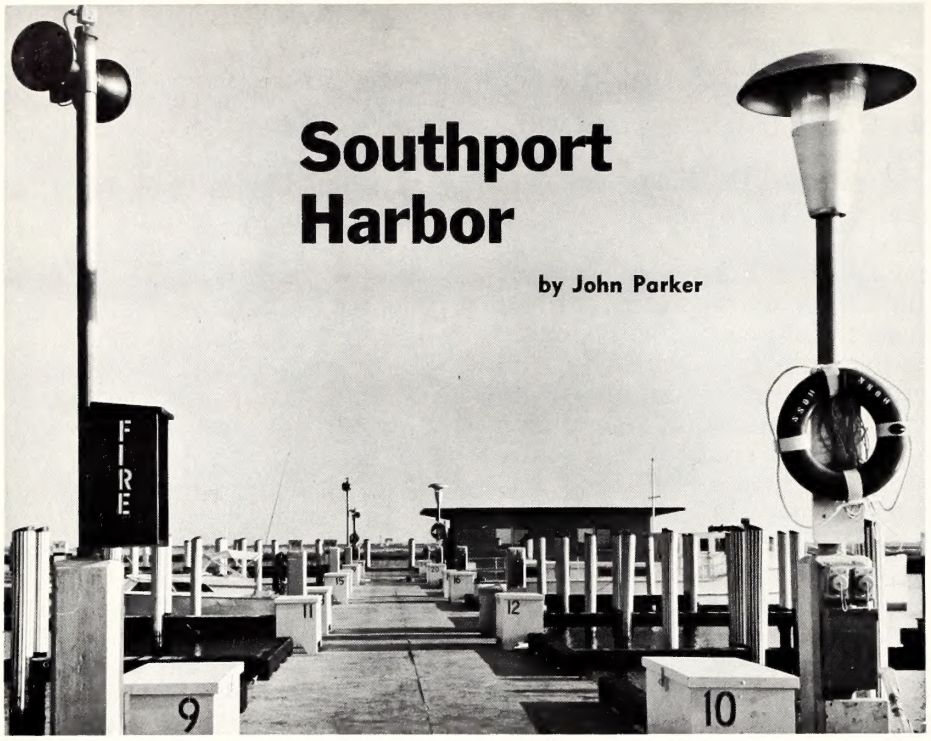
Although present Wildlife Federation membership is rather low compared to past years, these members, as individuals and groups have stood up to be counted when called upon to do so.

Here is a partial list of the Federation's accomplishments over the years:

- Sponsored legislation to create the Wildlife Resources Commission as a separate, self-supporting agency of state government. The basic law creating the Commission is considered to be among the finest of its kind in the nation.
- Took court action to halt proposed dredging for oyster shell beds in the fresh water sounds of the State. This dredging could have ruined vast areas of waterfowl and fresh water fisheries habitat.
- Sponsored legislation that places financial responsibility on those who pollute rivers sufficiently to cause fish kills.
- Objected to small watershed dams being placed in important trout streams on the watershed of the French Broad River.
- Cooperated with other organizations and agencies to approach a solution to coastal fishing problems.
- Sponsored legislation to increase penalties for the illegal taking of certain game species.
- In general has sponsored legislation on many matters that strengthen and support North Carolina's wildlife conservation program and enhanced its cooperation with other agencies designed to perpetuate our renewable natural resources.

One of the most significant actions taken by the Federation was its strong and successful opposition to legislation introduced to the 1965 General Assembly that would have reorganized the Wildlife Resources Commission and set a trend toward reorganizing the Commission periodically in years to come. Largely as a result of the Federation's leadership, the organizational structure of the Commission was returned to where it was when the enabling act was passed back in 1947.

Over the years the Wildlife Federation has accomplished many more things than can be listed here. It has served, and continues to serve, as a guardian of the conservation interests in North Carolina and a tower of strength supporting wildlife conservation in our State. ◆



Southport Harbor

by John Parker

PHOTOS BY THE AUTHOR

This is the story of a vision and its ultimate realization: a safe, convenient small craft harbor at Southport.

IT takes but a moment's survey, a glimpse, at the new, small boat harbor at Southport for one to realize that here is a boating facility conceived of and constructed by professionals. The location, general layout, modern office facility, spacious parking combined with the over all shipshape appearance of the facility reveals the planning and work expended here by the sea.

A facility of the North Carolina State Ports Authority, the harbor is located on Southport's waterfront with the harbor entrance leading into the inland waterway. The harbor and Southport can be reached via Highways 133, 211, or 87 which lead off of Highway 17 just south of Wilmington. Standing at the harbor and looking east one can see the well-known rookery of Battery Island. Further out is the much larger Smith Island, a beautiful unspoiled coastal island that is nationally known. The historic Smith Island lighthouse is a storybook attraction in itself.

Combine this with the serenity of the seaport town with its live oak-lined streets and consider the nearness of the port to a variety of water types and you have a true haven for boaters.

Incidentally, harbor manager H. A. Schmidt says it is about three miles to the inlet and that an eight mile run through the Cape Fear River Inlet will put the boater in some of the best all around fishing in the Atlantic.

Just what does the new facility offer to North Carolinians as well as transient boaters? The most obvious offering is the amount of dock space. The new facility offers berthing space for 110 boats up to 25 feet in length. Depth of the harbor channel leading to the docks is 12 feet at mean low water.

There is, of course, fuel, electrical service, and fresh water. Locker space, laundry and shower facilities are also available. For the boater who trailers to Southport there is a double launching ramp and berth space for his trailer-sized rig.

The service building located at the end of one pier has the usual assortment of refreshments, boat equipment such as cordage, life preservers, etc. Motels and restaurants while not a part of the facility, are within easy walking distance of the harbor.

Standard fees are charged for the above mentioned service. Prices for dockage, as an example, vary according to the size of the boat. A rate schedule which is included in the harbor brochure can be obtained by writing to H. A. Schmidt, Manager, Post Office Box 577, Southport, North Carolina.

A well-constructed harbor facility could be considered a safe harbor and certainly the Southport harbor fits both descriptions. From the concrete bulkheads to the sturdy timbered docks, one gets the impression that the facility was built to last and endure. The location of any harbor is of prime importance and the planners of this one have chosen a well-protected site and one that has excellent access to the inland water routes as well as to the Atlantic.

Other items which help make Southport harbor a safe one are fire extinguishers at certain intervals along each dock; ring buoy stations are present in the event someone falls from a dock; good lighting; a non-skid boat ramp and since this is a 24-hour service facility there is someone to help watch over the entire area. Also harbor rules prevent users from leaving loose gear

lying about the dock or from doing heavy repairs on docks. There are special places for cleaning your catch and garbage cans are available for disposal of all refuse. And if this were not enough, the harbor master can communicate with incoming boats over ship-to-shore radio and direct traffic and converse with docking boats via a two-way loud speaker-microphone setup.

K. & M. Sales and Service, a contract vendor, handles the boat and engine repairs and fuel dock. This firm is in the process of erecting a covered storage building for small boats. The boats will be lifted into storage spaces by means of a specially-equipped fork lift truck. Another facility addition which was recently completed is a travel lift that can handle boats weighing up to 36 tons. This equipment will be used to haul the big ones out for repair.

Future plans call for a marine railroad which would handle even larger craft than could the lift. And scheduled for completion in 1966 are 28 covered slips handling boats up to 60 feet in length. The Southport harbor has been in use only a few months but already hundreds of boats have been serviced, stayed awhile and left the harbor's security and headed along the waterway. Other boats owned by charter boatmen, commercial fishermen, and resident pleasure boatmen will remain indefinitely at the Southport facility.

Why did the facility come into being? In a few words, because a group of citizens and officials saw the need, realized the service such a facility could perform, brought about presentation for vote on a $500,000 bond issue. The issue passed, the State Ports Authority was authorized to receive the money and several years and half a million dollars later Southport had a new, small boat harbor.

And so on May 30, 1965, many citizens, officials and members from organizations such as Tar Heels Afloat, the Charter Boat Association of Southport, etc., heard Governor Moore in his dedication address say that "the harbor is a real asset to this community, this county, and this region."

If you are interested in boats, the coast and even if you are not, it's a safe bet that you will enjoy a trip to Southport Harbor. But be prepared for more than one visit, Southport has an inviting atmosphere that will make you want to return. ◆

At lower left, boats entering the harbor are attracted to the administration building. Above, a cruiser is made fast in one of the harbor's berths. The entire facility has the appearance of neatness and durability. And they catch fish off Southport too!

Nutria

With the appetite of a hungry goat, a face only a mother could love, the nutria looks like a cross between a muskrat and a beaver.

by Ken Wilson

Photos by the Author

IN Argentina, Brazil and Paraguay where the nutria is a native, this strange looking furbearer is known as the South American beaver or coypu. But in the U. S. A. and North Carolina most of the few people who know the beast say it has a face that only a mother could love, the figure of an oversized guinea pig and the appetite of a cow. They know it by one name—pest!

I agree with much of this description; nutrias are ugly or at best, odd looking. They have long, rat-like tails and beady eyes. And animals that whet their appeties on gardens certainly must be called pests! But there is another side to the coin, for the fur of nutria is an important article of merchandise in many countries around the world. Tailored furs of the animal are considered comparable to beaver in quality and durability. Its silky softness wrapped about milady provides her with a touch of regal beauty. Native nutria from South America have these qualities but unfortunately, the same properties of fur are apparently missing from the animals that dwell in North Carolina. This gives Tarheel trappers a solid reason for not liking the nutria.

Description

The nutria is a large rodent of robust body, small eyes, four large, yellow "Bugs Bunny" teeth, webbed hind feet and a round, nearly bare tail. Its fur is reddish gray above; dark gray, tinged with blue below. Large specimens range from 14 to 18 pounds in weight and a few exceed 20 pounds.

General Information

The first nutria in America were stocked in Louisiana during the 1930's. Alabama, Maryland, Pennsylvania, Texas and Wisconsin—in all cases to their sorrow —are among some of the other states that have them. Trappers in Louisiana harvested 436 of the big rodents in 1944. During the 20-year period since then, the average price paid for pelts ranged from 50 cents in 1944 to $5 in 1946 and $1.50 in 1964. Muskrat yields in Louisiana during the same period dropped from 4,743,-790 in 1944 to 240,079 in 1964 and prices paid for pelts ranged from 80 cents to $1.75. Despite this sharp reduction in the muskrat harvest, the nutria in Louisiana is thought by some people to be an important fur resource. However, in other states that have them, the nutria is a liability; it is not wanted.

In North Carolina, the first nutria (two females and one male) were released by a hunting club on the Outer Banks near Buxton Woods in 1941. Ten years later (1951) about six animals were stocked near Garysburg in Northampton County and in 1953 some trappers planted 27 nutria on Bray Island in Currituck Sound. Animals in the Garysburg planting did not move far from where they were released. It was not necessary; nearby gardens contained too much tasty food. Despite their proximity to irate farmers, it took two years to eradicate them. Nutria at Buxton Woods have spread north to Oregon Inlet on the Outer Banks, while animals from the Bray Island stocking have been reported over most of Currituck Sound and as far as 60 miles up the James River in Virginia. This is about 100 miles from the point of stocking. That's some traveling!

Whether feeding in a cornfield or a marsh, the big, scaly-tailed rodent is strictly a vegetarian. Nutria inhabiting marshes eat huge quantities of the same foods liked best by muskrats. These foods are cattails and threesquare bulrush. But there is a big difference in the eating habits of the two animals. Nutria are surface feeders and they often leave a marsh looking like it had been mowed with a dull scythe. Muskrats on the other hand dig underground tunnels and feed more on roots. Competition for the same foods could create problems in areas where populations of both animals were heavy.

But lack of food has not caused the sharp drop in muskrat numbers in Currituck County in recent years. Tidal marshes bordering Currituck Sound contain enough food to support a much larger population of muskrat and nutria than now dwell there. Rumors persist that the drop in populations has been caused by the slaughter of thousands of muskrats by nutria. Some of the stories that I've heard give credence to this thinking. At Buxton Woods several years ago nutria attacked and nearly killed a hunter's prize beagles. The same man said he was attacked by a nutria when he drove one out of his garden. Trappers report being attacked by animals in traps. This is true; I've had some close shaves myself. One bite could sever a man's finger. But it is not true that nutria slaughter large numbers of muskrats and gen-

erally both rodents get along well together. The main cause for the drop in muskrat numbers of Currituck Sound tidal marshes is the depredations by raccoons on muskrat nestling populations, not depredations by nutria.

Reproduction

What the nutria lacks in looks is offset by its capacity to reproduce in multiple figures. Like all rodents, nutria are polygamous and the gestation period is about 130 days (as opposed to 28 days in muskrats). Litter sizes range from 2 to 8 and occasionally larger with the average unit containing about 5. Although mating sometimes occurs within 48 hours following the birth of the young, most nutria have only two litters a year.

Unlike muskrats on tidal marshes whose young are born in lodges, nutria bear their babies in nests exposed to all kinds of weather. Nests observed on Bray Island were composed of dry, finely shredded cattail leaves and the hollowed beds were about 30 inches in diameter. The young are born fully furred with eyes wide open and at first glance they look like miniature adults. Within hours after birth they leave the nest and go to water. The teats are located along both sides of the body thus permitting the young to feed while the mother floats or swims in water. It must be quite a sight to see a family of baby nutria suckling their mother while floating in water. Normally, the young are weaned after seven or eight weeks but long before this time they may be seen nibbling green foods. Five young about two months old were observed in a marsh on the Outer Banks following their mother single file along a trail. Though there are exceptions, both sexes usually attain sexual maturity at about eight months of age.

Except for man, full-grown nutria have very few enemies. That may be one reason why they multiply so fast.

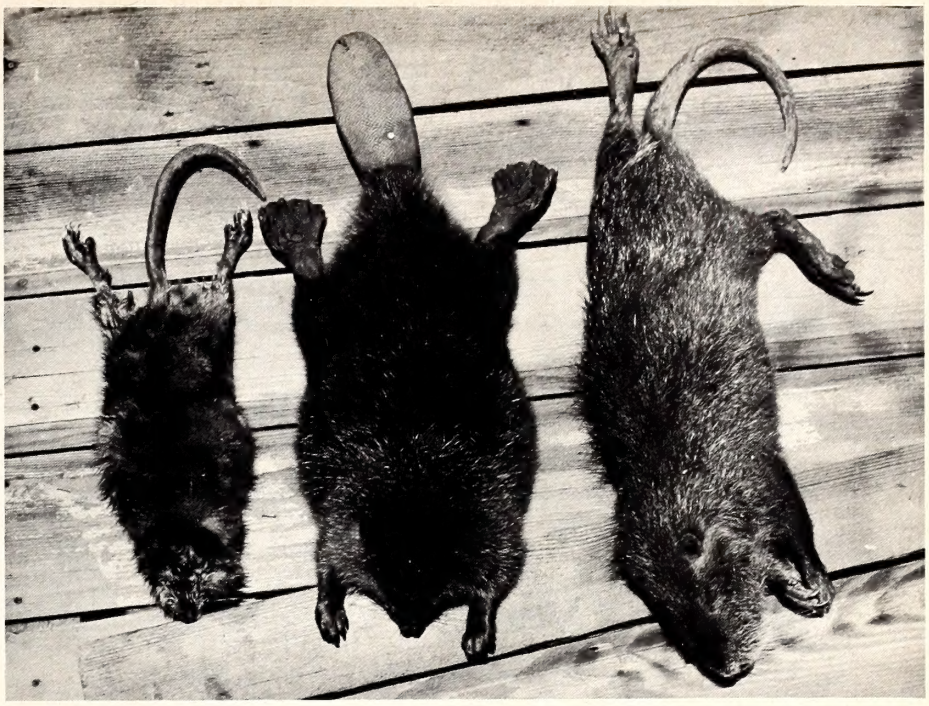
Economic Value

The nutria is not considered a furbearer in North Carolina and may be trapped or killed by licensed trappers or hunters the year round. Most of the animals harvested, however, are taken during the open season for fur animals. Recently in Currituck County hunters have been using dogs to drive the nutria into open water for an easy shot. This type of hunting not only provides exciting recreation for the participants but it is an effective means of keeping a rapidly increasing population under control. Most of the nutria taken by trappers are caught in sets intended for other furbearers. Unlike other fur animals the belly—not the back—has the highest commercial value because the fur on this portion of the skin is richer and denser. Furs measuring 26 inches or more are considered No. 1 pelts and anything under 18 inches has little value. Small pelts representing the majority of those trapped—are discarded.

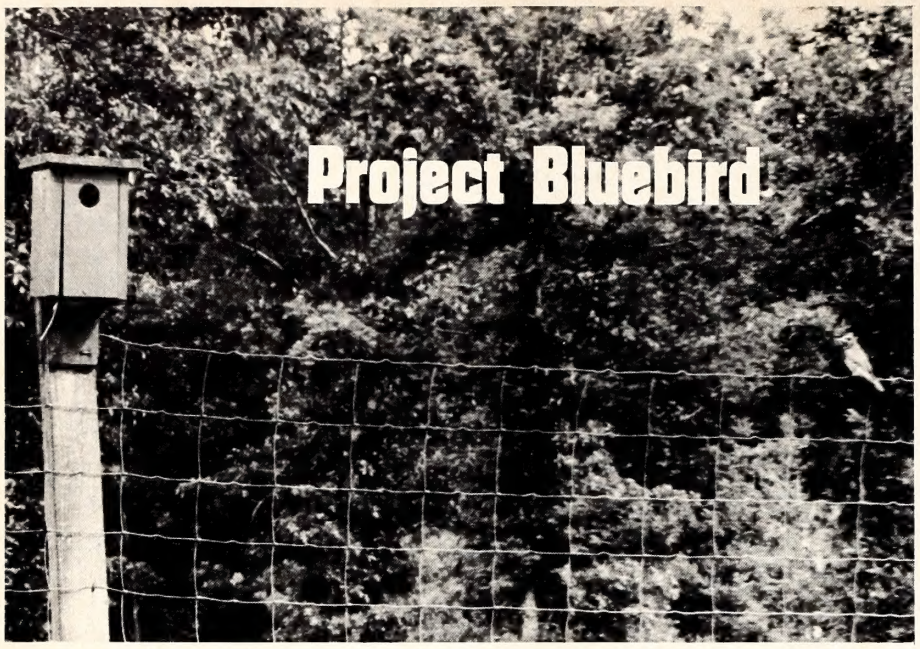
Very few trappers have ever shown any interest in nutria. For one thing, it takes more than four times as long to skin them as muskrats. Professional skinners at the Moyock fur shed detest skinning nutria. They say "the ugly beasts smell." Actually they don't smell nearly so much as skunk or mink and all trappers relish the chance to skin a mink, smell or no smell, because of the dollars its silky pelt brings. Otters that brought $24 in the 1964-65 season took more time to skin than nutria but I've never heard anyone complain about skinning this member of the weasel family. So perhaps it's the dollar value of a pelt that makes skinning any furbearer a pleasure instead of a chore.

The first nutria that brought any money in North Carolina were received at the Moyock fur shed during the winter of 1954-55. That year, 31 pelts brought the trapper an average of $3 per pelt. This wasn't bad. Muskrat pelts were bringing an average of only $1.40. A few trappers expressed new interest in nutria. Maybe prices next season would go up to $5. But they did not. That year (1955-56) 33 pelts brought the trapper $1.50 each and in the 1956-57 season 26 pelts had no value. Since 1957 to the present, prices paid for nutria have never come close to the $3 figure. The largest number ever sold was in the 1964-65 season when trappers harvested 966 animals. These nutria brought an average of 75 cents per pelt. Furriers in New York do not like to

• continued on page 31



Shown here are the relative sizes of (left to right) a muskrat, a beaver, and nutria. The muskrat weighed 2½ pounds, the young beaver 14 pounds, the nutria 13 pounds. It was shot near Bray Island in Currituck Sound.



Project Bluebird

by John Hubbard

Reprinted from **The Journal-Patriot**
North Wilkesboro, N. C.

THE bluebird, one of the farmers best feathered friends, is getting a big assist in Wilkes County.

Realizing that the bluebird is facing extinction because of insecticides and destruction of nesting places, six Wilkes County men launched a project to save the birds last winter. The Wilkes Soil and Water Conservation District provided funds to initiate the project.

Sam Vickery, Hight Helms, Robert Gibbs, Conrad Alexander Jack Sherwood and Clarence Dickens contacted scout troops, vocational agriculture departments and Future Farmers of America Clubs with a plea for the construction of nesting houses.

As a result of these men's efforts, there are 378 new bluebird houses in Wilkes County. Over half of these houses have been occupied this spring and summer. John Nelson, Soil Conservationist with the Soil Conservation Service said these bluebirds are now raising the second brood.

The Soil and Water Conservation District has played a major role in encouraging the construction of the bluebird houses.

Mountain View Scout troop, Wayne Elledge scout master, has built 15 houses. Ted Gambill's Hinshaw Baptist Church Troop has constructed 35 houses; North Wilkesboro Presbyterian Troop 336, Harold Vaughn scout master, 15; West High vocational agricultural department, 225 and Wilkes Central vocational agricultural department, 67.

Rock Creek Farm

Typical of the houses are those found on Hight Helms' Rock Creek farm in the Rock Creek Community.

Farm roads with fences bordering open fields make the habitat ideal for the bluebirds.

He has made some of the houses from plans found in "House and Garden" magazine while others have been made from hollow sourwood and dogwood logs. Mr. Helms has modified the "House and Garden" plans somewhat, making the roofs in a steeper angle.

This helps to keep predators from entering the houses and makes the rain drain from the roofs.

In March, 1964, he constructed and located six houses. Within a week he observed bluebirds nesting in the houses, pointing out that "Until this time I do not recall seeing a bluebird on the farm."

He added that during the spring and summer bluebirds raised two or three broods in the houses. Since the female lays four to seven eggs, he estimates 40 to 50 birds were raised in the six houses.

Using five birds raised as an average in the houses, and an average of two broods, 1,890 bluebirds could be hatched and raised in the 189 houses used in Wilkes this spring and summer.

Insect Catchers

Bluebirds are among the greatest of the insect catchers with 62 percent of the bird's diet coming from insects, six percent from spiders and centipedes and 32 percent from wild fruit and grain.

Joseph J. Shomon notes in his book, "Birdlife in Virginia," that some birds eat as many as 10,000 insects in a day. If a human famly ate in proportion to a family of birds, the daily grocery list, Mr. Shomon points out, would appear something like this: 50 loaves of bread, 25 pounds of hamburger, 30 doughnuts, 10 pounds of spinach, six heads of lettuce, one gallon of ice cream!

But the bluebird's good qualities are not limited to insect catching. The blue-backed bird with reddish brown breast is one of the prettiest to be found in North Carolina.

Mr. Shomon describes the bluebirds as "meek little birds, dignified, quiet, often perching on a bean pole, fence post or single-stemmed dead tree trunk." The familiar "cher-weet from orchards and woodland edges is familiar to all who have observed him."

State Project

What has been done in Wilkes, the six Wilkes bluebird boosters hope will be done on a state-wide basis. They consider their project in Wilkes only a beginning.

Persons interested in other counties could easily get a similar bluebird saving program underway, they believe.

Mr. Helms said he found the scout troops and agricultural groups enthusiastic about the project. There is a great reward, he feels, in seeing the bluebirds nest and hatch their young.

A great bluebird fan, he hopes others will take up the cause to save the birds. ◆

DEPARTMENT OF LETTERS TO THE EDITORS, FIELD NOTES, AND ITEMS OF INTEREST

Conducted By Rod Amundson

If you have ever attended a public hearing, expressed your opinion, and come away with the feeling that your time, breath and energy were wasted, your feeling on the matter could be justified, —maybe.

Suppose you attended one of nine public hearings held last spring for the purpose of giving Tarheel hunters and trappers a chance to express their views on how the 1965-1966 hunting and trapping regulations should be set. You got up on your feet, said what you had to say, and sat down. Did anything you said have any effect on the regulations as they are now established? Very likely it did. But you weren't told about it.

In the future you can count on the Wildlife Resources Commission to inform you as to any action or lack of action it might have taken as a result of something you might have had to say at one of these hearings.

Beginning in 1949 and every year since, the Commission has had a policy of holding public hearings to give sportsmen a voice in setting the hunting and trapping and fishing regulations for the forthcoming seasons.

Early in its history the Commission recognized that North Carolina has a great deal of diversity in the "distribution, economic value, and breeding habits of wild birds and animals within the different physiographic regions of the state, together with regard for the sufficiency or lack of food and other elements necessary to the conservation and propagation of wild birds and animals." (Note: the quotes are from the minutes of the April 21, 1949 meeting of the Commission in Raleigh.)

Over the years, stenographic transcripts were made at each of the nine hearings. As time went on, and as more public attention was given to these hearings and more people attended them, these transcripts grew in physical volume. The record of the nine hearings held between May 18 and May 28, 1965 occupies almost 37 single-spaced typewritten pages.

While these public hearings have helped to bring about a more cooperative feeling between the Wildlife Resources Commission and the sportsmen it serves, communication between the Commission and sportsmen who spoke at these hearings has not been entirely clear. People who speak at these hearings could rightfully expect to be informed of the effect their thinking might have had in the establishment of the official regulations, even though printed copies are given to each license-buying sportsman, the Courts, and members of the General Assembly.

At the nine hearings on hunting and trapping regulations last spring a total of 666 sportsmen attended, and most of these had suggestions, objections or comments on the proposed regulations. Some of these were followed, others were not. Although each person who spoke regarding any of the proposals was asked to give his name and address, it was impossible to record these clearly enough to obtain a complete record of the people who were heard; and while the Commission considers it highly desirable to notify each advocate of an idea or suggestion the outcome of his proposal, this could not be done.

Plans are already under way to work out the mechanics of handling this problem at next year's hearings. These plans will probably involve requesting each person wishing to be heard to put his name and address on a card so that he can be informed of the action taken by the Commission later on.

As could be expected, suggestions from sportsmen varied among districts. Mountain sportsmen had much to say with regard to deer, bear and boar hunting, especially on wildlife management areas. Hunters from the Piedmont, where there is very little big game hunting, were concerned more with such small game as rabbits, squirrels, and quail. Coastal Plains hunters were largely concerned with deer and bear hunting.

In general, the seasons and bag limits on small game came in for very little discussion, since the proposed regulations were almost identical to last year's rules, and small game species have been generally abundant throughout their range.

North Carolina is one of only a few states that have this democratic system of giving sportsmen a strong voice in setting hunting, fishing, and trapping regulations. Plan to attend the hearing in your area next time one is held. You may be sure that you will be heard, and that you will have a direct response to what you will have to say. This, in some small way, is democracy in action.

Air-borne

DEAR SIRS: I have enjoyed each copy of WILDLIFE I could get my hands on. I think it is wonderful and read each issue over and over. Enclosed is my subscription for two years.

I would like to know if you can tell me how cattails get started in farm ponds; where they come from, and what to do about them, there are none anywhere else near here. CARL G. POPE, HARRISBURG

Cattails have very tiny, downborne seeds that can drift for miles in the air, or can be carried on the feet of wading birds. They can be removed by digging them out if there aren't too many, or by selective herbicides. Perhaps your County extension agent can give you advice.—Ed.

KNOW YOUR PROTECTOR

Walter S. Sawyer, Jr.

Wildlife Protector Walter S. Sawyer, Jr., son of Mr. and Mrs. Walter S. Sawyer of Mamie, North Carolina, was born in Spot, North Carolina on May 12, 1922. He was graduated from Poplar Branch High School in 1940, and served in the U. S. Coast Guard for six years.

Mr. Sawyer attended the Wildlife Recruit School in 1956, and was employed on October 10, 1956. He has attended six In-Service Training Schools and represented District One as a candidate for Protector of the Year in 1964.

Mr. Sawyer now resides in Mamie, North Carolina. He is a member of the Powell's Point Christian Church, a member of the Poplar Branch Ruritan Club, and a member of the lower section Currituck Fire Department, serving at the present time as treasurer.

DIVISION ENFORCEMENT RECORD FOR JULY, 1965

HUNTING & FISHING	
Persons checked	39,273
Total prosecutions	976
Total convictions	950
Total cases not guilty	6
Total cases nol prossed	19
Total cases dismissed	1
Total fines collected	$2,241.35
Total costs collected	$8,170.55
BOATING	
Boats checked	14,759
Total prosecutions	366
Total convictions	353
Total cases not guilty	8
Total cases nol prossed	4
Total cases dismissed	1
Total fines collected	$ 949.35
Total costs collected	$3,087.65

All fines and any arrest or witness fees are paid into the school funds of the counties in which the violations occurred, and no part of the fines or costs collected are paid to the North Carolina Wildlife Resources Commission or its personnel.

Keep Off the Sand!

DEAR SIRS: Reference is made to your phone call on July 19, concerning the National Park Service regulations against landing planes on the beach of Cape Hatteras National Seashore.

It is true that a citation was issued for the landing of a plane on the beach adjacent to the Pea Island Campground. In this case the plane not only landed on the beach where people were fishing and roaming around, but had buzzed the campground at an extremely low elevation several times.

The regulations referred to are a portion of Title 36, Parks, Forests, and Memorials, Section 1.61, Aircraft, (a) No person shall land aircraft on land or water on any federal owned area within any National Park or Monument other than at one of the following designated landing areas: (8) Cape Hatteras National Seashore, North Carolina. Billy Mitchell airstrip located approximately 6 miles southwest of Cape Hatteras Lighthouse on Hatteras Island, North Carolina.

Section 1.1 Definitions. The term "park" includes — as well Cape Hatteras National Seashore Recreational Area—.

These are the sections of the Title 36, Code of Federal Regulations, which prohibits landing of planes anywhere in Cape Hatteras National Seashore except at the above mentioned airport. KARL T. GILBERT, Superintendent, CAPE HATTERAS NATIONAL SEASHORE, MANTEO

Bobbers Away

DEAR SIRS: Thanks for your fine magazine, and for such a modest fee.

However, as an ardent fisherman, may I bring up a point for consideration regarding future fishing articles. It is my observation that the majority of articles on fishing and techniques of fishing, including national sports magazines, are based on the assumption that you are out in a boat on a large body of water. And, in protest, I contend that on a nice, warm, sunny weekend, there are thousands of bank fishermen in this state, out trying their luck at a nearby pond or river, many with the plain old fishing pole, and of course, many, now, with light spinning tackle. Although I have no statistics to support my assumption, I would venture to say the old-fashioned bank fishermen outnumber the boat fishermen by far. So, how about slanting some future articles toward us poor fishermen standing on the bank, waiting for the cork to disappear. GENO GERMINO, DURHAM

Nice Spot

DEAR SIRS: In your August issue which I have just received, in your article "Pleasant Vacation," I note that you failed to list one of the newest and finest Access Areas in North Carolina.

I refer to the access area at U. S. Lock and Dam No. 2, located two miles east of Elizabethown in Bladen County on the Cape Fear River. E. F. McCULLOCH, JR., ELIZABETHTOWN

This particular area was constructed by the U.S. Corps of Army Engineers, and for this reason is not listed among those constructed by the Wildlife Resources Commission. Thanks for calling it to our attention.—Ed.

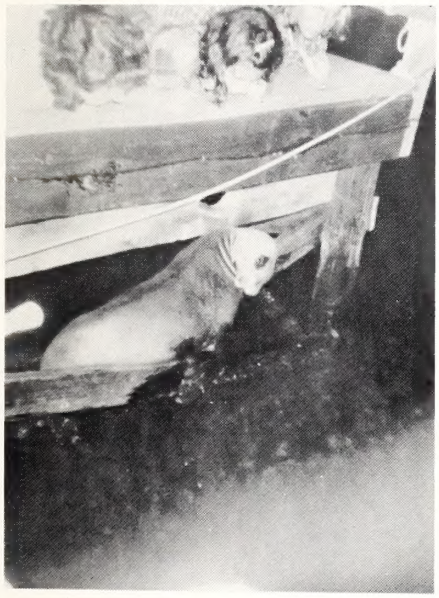
Resident or Transient?

DEAR SIRS: This is to report the appearance of a seal in the Intracoastal Waterway, two miles north of Hampstead on July 14, 1965. It was first sighted by some men in a boat who cornered it under a pier at Kings Landing and tried to catch it. The seal got away and was seen swimming north in the waterway. About 7 p.m. my wife and I took our boat and ran up the waterway for a couple of miles to try and find the animal again. Just before dark we found it lying on a slanting board under a pier at Kings Landing. It seemed to be asleep because a man was fishing off the pier and he did not see the seal and it paid no attention to him. When we pointed out the seal to him it woke up and started barking at him as he leaned over to look at it. We drifted up close in the boat and could see that it appeared to be a female about 5 feet long.

It was in good condtion except its flippers were cut up. It must have

injured them trying to climb up pilings with barnacles on them. We offered it a fish but it shook its head and made angry noises as it tried to bat the fish away with its head. (I must admit that the fish was a little over-aged!)

A friend of ours took pictures of the seal with a flash camera. Many



This is the object of the attention, a sleek visitor from the high sea.

people came to see it and it apparently stayed on the piling all night. The next morning a lady saw it leave its perch at about 7 a.m. It started swimming north up the waterway and was not seen again.

The seal may have come in through Old Topsail Inlet. A man reported seeing an animal that looked like a dog swimming in the inlet the night of June 13. It disappeared before he could get close to it. J. M. JENKINS, Jr., HAMPSTEAD

World-wide

DEAR SIRS: This is a subscription for my brother serving as a Navy flyer in the Viet Nam area. If there is any additional charge for overseas mailing please let me know. I ask him to put the magazine in the wardroom of the carrier to give N. C. a little publicity in that area. He said that he would. Thank you. COLLINS M. ABBITT, JR., KERNERSVILLE

On September 27, four members of the Wildlife Resources Commission took their oath of office. From left to right are Jay Waggoner, Graham; Dr. Joe M. Anderson, New Bern; James A. Connelly, Morganton; and James A. Bridger, Bladenboro. Superior Court Justice James H. Pou Bailey administered the oaths.

TIPPER FLINTLOCK'S

Tips on Shooting Safety

KEEP YOUR GUN UNLOADED WHEN NOT IN USE

BE A SAFE SHOOTER

THE NATIONAL RIFLE ASSOCIATION

NUTRIA

• continued from page 27

buy small shipments of fur and they say the quality of this fur from the Tarheel state is not the best.

What some people had hoped would be a valuable furbearer in North Carolina has so far turned out to be an unwanted foreigner and a pest. From what I've seen, the nutria will be with us for many years to come. It will provoke some cussing, produce a few dollars for its fur and provide a few hunters some recreation. With the excise tax on fur garments no longer in effect, it's possible that its pelt will bring more money. This may happen. But unless I miss my guess, by the time 1970 rolls around, most folks in the Tarheel state will be still calling the nutria a pest!

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JOEL ARRINGTON

Down to the Sea

Although summer often takes its time about leaving, October marks a time of new hope for the surf caster. This early fall scene is a stretch of Hatteras beach, a tricky bit of sand jutting into some famous, fishy waters. The quarry: anything that'll hit.

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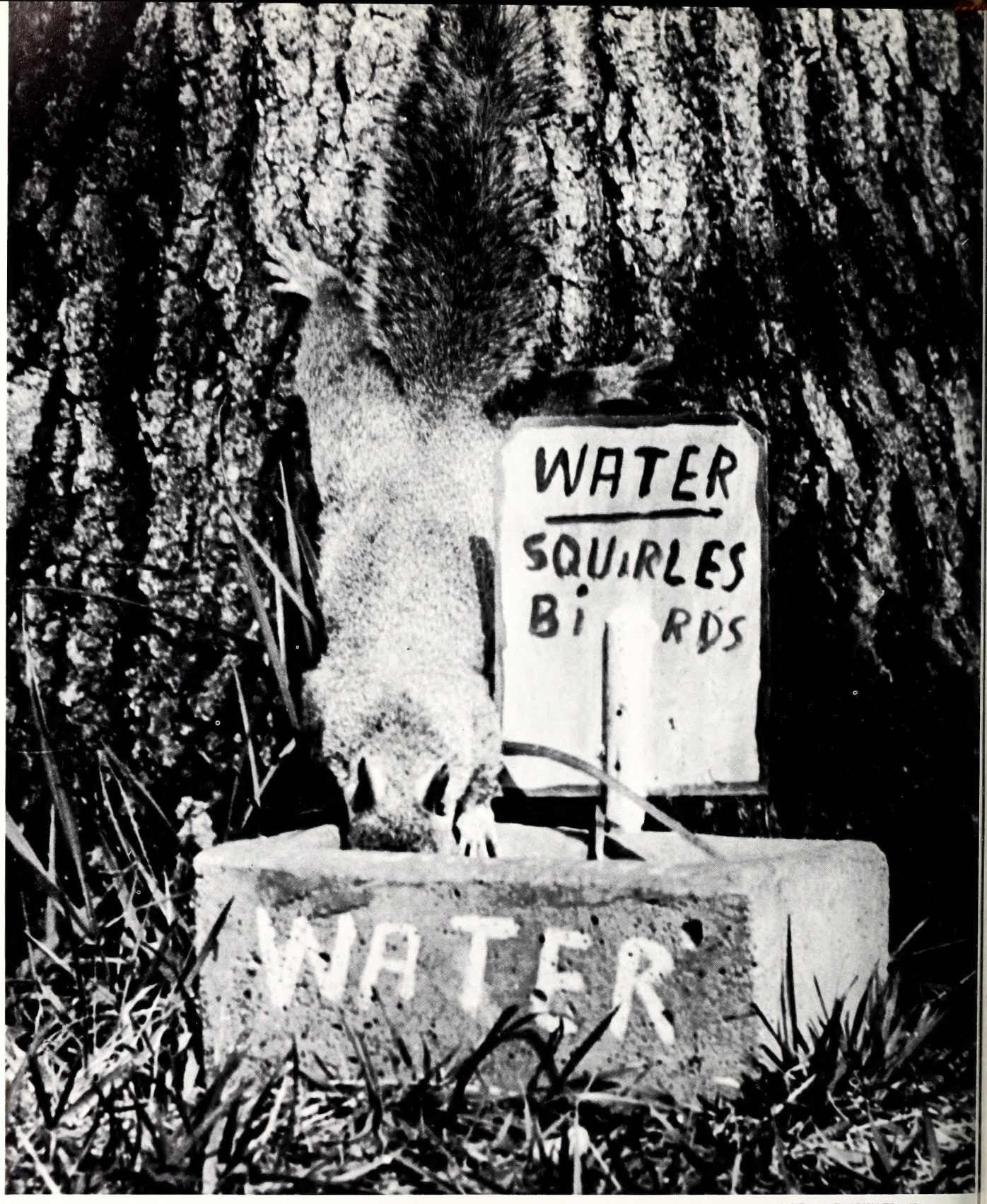
Wildlife IN NORTH CAROLINA

NOVEMBER, 1965



JAMES P. BARRINGER, JR.
SALISBURY EVENING POST

Water Hole

It doesn't take much to satisfy the thirst of most wil life, and this concrete box serves well. Patients of th Veterans' Administration Hospital in Salisbury ha placed several on the hospital grounds. We're not su if the squirrels and birds can read, but they find the

STATE OF NORTH CAROLINA

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GOVERNOR

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WILDLIFE IN NORTH CAROLINA recognizes the need for close cooperation between State and Federal conservation agencies and the people who hunt and fish—to bring about a restoration of our renewable resources. The Editor gratefully receives for publication news items, articles, and photographs dealing with the North Carolina out-of-doors, but reserves the right to reject materials submitted. Full credit is given for all materials published.

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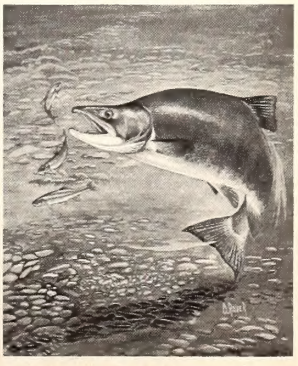


This is a male Kokanee salmon in its characteristic spawning color and humpback shape. They were placed in Nantahala Reservoir several years ago as experimental forage for the rainbow trout. Growth rate has been good and many up to 3 pounds are taken by anglers. Since their food is almost entirely microscopic plants and animals, this one is simply driving the creek-chubs away. Painting by Duane Raver

PUNGO
NATIONAL WILDLIFE REFUGE

by John R. Parker, Jr. Photos by the author

WHEN did the first flocks of migrant waterfowl begin wintering at Pungo Lake? Was the event watched by the red man? What is the age of this shallow lake? These are questions to which we will probably never have the answers. What is known, however, and what is more important is that there now exists a wildlife refuge where none existed before and that man and wildlife will benefit.

Much has changed since the first great flocks of waterfowl pitched into Pungo's dark waters. And there will be more changes in the near future. That's what this is about, Pungo, a lake in eastern North Carolina which is to be developed for wildlife.

Why is there now a 2800-acre lake lying on the Hyde and Washington county line? Theories on the formation of the lake vary, as one would expect of theories. Recent studies reveal that the geological formation in which the lake lies is somewhere between 5,000 and 10,000 years old, much younger than originally surmised by geologists. Furthermore, the lake is simply a water-filled depression, upon the surface of North Carolina's Coastal Plain, perhaps modified by fire and siltation.

Another theory follows the thinking of formation in more recent years completely by natural or man-made fire. Both theories conclude that Lakes Mattamuskeet, Phelps and Alligator had similar patterns of formation.

The Pungo Lake area was once a great forest composed mainly of cypress and white cedar. Some evidence of these majestic trees can still be seen on the surface and their remains are often uncovered in the work of ditching. The logs and stumps are charred by fire. But it is said that an ambitious person can salvage certain smaller logs from their graves of peat and put them to modern-day use.

Anyone familiar with this part of North Carolina, included in a section known to geologists as the Swanquarter area, would probably be familar with its history in fire. Once ignited, the peat type of soil found there will burn for months. Perhaps fire did play a role in the formation of the lake. It also has affected the recent history as well as day to day activity there. According to Refuge Manager James Dale, it took complete flooding, accomplished by blocking canals, to quench fire in one section last year.

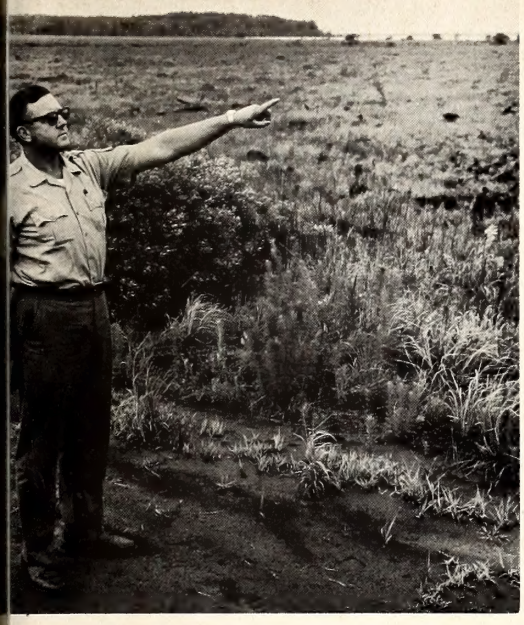
To say only that the area has changed in recent history is hardly sufficient treatment. Where Indians once crept silently along a ridge bordering a cypress swamp, there now labors a dual-wheel tractor. Where early loggers took much and left little there now exists modern forest management.

This then is Pungo Lake and its surroundings. Remote enough to beckon to those who live in other parts of the state, yet modern enough to be productive.

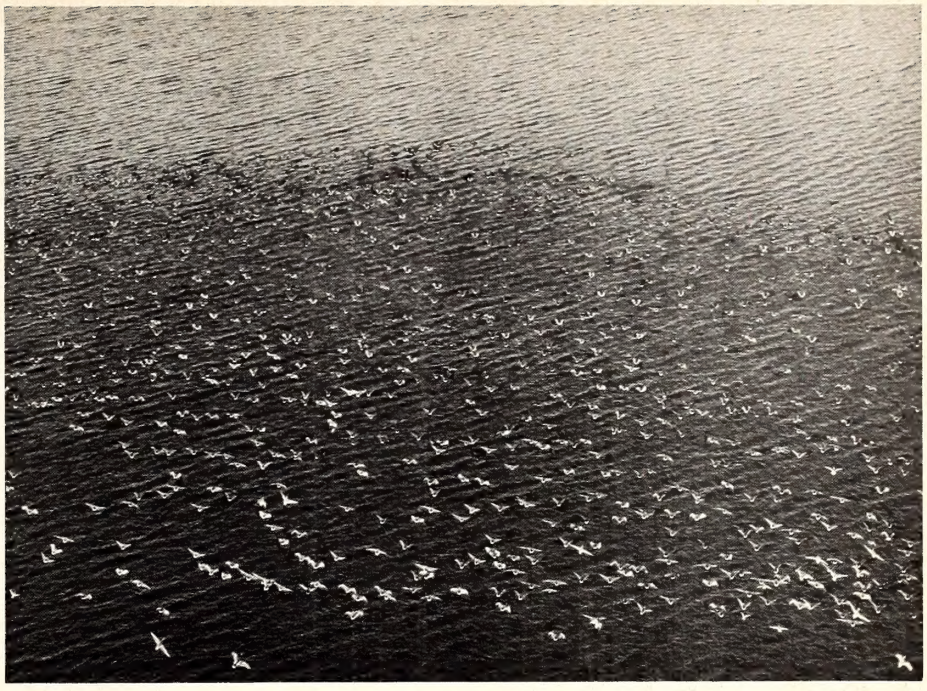
Waterfowl may have used this lake we call Pungo for hundreds of years. But if they did not (because for some reason the lake was unsuitable or did not exist) then in the Swanquarter area they could have easily turned elsewhere.

However, as each flock leaves eastern North Carolina for their nesting grounds, there are less and less suitable, alternate wetland types awaiting the returning winter flocks. This is why the Pungo Refuge is important. It is fitting that it has taken its place in the chain of Atlantic flyway refuges. Officials call its location "strategic."

MUCH of the credit for this 12,350 acres of eastern North Carolina real estate becoming a wildlife refuge belongs to Congreessman Herbert C. Bonner. At the Refuge dedication on November 24, 1964, principal speaker D. O. Beasley, Assistant Secretary for Administration of the U. S. Department of the Interior said, "Pungo Refuge exists because of his (Bonner's) tenacity, persuasiveness and his loyal interest." Other individuals as well as organizations played highly important roles in the early planning. Foremost is the U. S. Fish and Wildlife Service, which of course administers the National Refuge Program. The North Carolina Wildlife Resources Commission and the Wildlife Federation also contributed to the time when Pungo Lake would ultimately be-



Refuge Manager James Dale points out an area scheduled for marsh development.



A flock of Canada geese and a few ducks skims the surface of Pungo Lake. This photo was taken last February and shows but a small fraction of the Pungo birds.

come managed for wildlife and the enjoyment by all people who take the time to visit it.

The establishment of Pungo Refuge was approved by the Migratory Bird Conservation Commission on May 21, 1963, as authorized by the Migratory Bird Conservation Stamp Act of 1961.

Prior to acquisition by the U. S. Fish and Wildlife Service, Pungo Lake and a majority of the adjoining lands were owned by the American Land Company. A smaller portion of what now constitutes the refuge was under private ownership.

The fires that swept the area of its great swamp forest affected greatly the recent-day development of the area. Had these fires not raged uncontrolled, there would perhaps be today sizeable forests here. Instead much of the area is pocosin. The chief vegetation is composed of fire-resistant shrubs such as bay and gallberry interspered with pond pine.

With timber production below normal in much of the area, plans were developed to clear large tracts for farming. This was no doubt tried on a small scale for many years but it wasn't until after World War II that large scale operations were started. This work was done chiefly by land development companies and a few independent farmers with large operations.

As in any farm clearing operation, the first consideration is to get at the land with proper equipment. Early developers of this type of operation soon learned that it was not difficult to lose a tractor in this wet peat type soil. High flotation equipment is a must. To facilitate equipment harvest, it was also learned that drainage was a must. Drainage of this type of terrain should not be confused with drainage of true waterfowl wetland that has contributed to the plight our ducks are presently in. Pocosins seldom offer good habitat for waterfowl. Today, the canal is as much a part of the Hyde and Washington County scene as it is in Venice.

Many farmers in the area would probably agree that the root of the evil in this type of farm operation is just that—roots. The skeletons of the forest of the past must be dealt with. After the ditching and general clearing comes the business of continous rooting. Rooting often becomes an underground logging operation as the forest debris is often quite sizeable. However, there is plenty of smaller material and the driftwood collector could have a field day in most any field in the area.

Untreated peat-soils are too acidic for good farm production, so liming operations are as important as the clearing steps. Lime, tons of lime per acre are needed to prepare the soil for good productivity.

During the early stages of farm development in the area, crops were not always harvested. This was due in part to poor footing for harvest equipment and in part to low yield. These facts enhanced the area greatly for waterfowl usage. Low yields turned into unusually high yields once a field is in proper condition and today this area is a leader in corn and soybean production.

THE reason, of course, for this discussion on the farm operation is that much of the work in the refuge area will be essentially a farm operation. As we have said, waterfowl of years past had much to choose from but today they have learned to like the taste of harvest leftovers and grow quite plump on this feeding. They like it all right and talk it up come feeding time. If we could interpret the chatter made by 100 circling mallards it might mean something like—corn and beans, corn and beans, corn and beans . .

But let's not underestimate the importance of the marsh and lake vegetation. Management plans also include the development of these assets. In order to develop the marsh, construction of impoundments, water control, structures, pumping stations, and the establishment of the best food types must be affected.

The lake now offers sanctuary, some food and of course watering; but to improve upon it water control structures, removal of forest debris, construction of nesting islands and the introduction of the best food must be carried out.

As development progresses, waterfowl utilization of the area will no doubt increase. However, Pungo Lake is now and has been for years (especially since farming has increased) an area of high waterfowl concentration. Geese and several species of ducks start arriving at Pungo Lake in mid-October. A peak population of about 20,000 geese was observed last year in mid-February. Mallards and blacks peaked in February with a thousand or so of each species. The "big" duck at Pungo is the pintail with a population of about 12,000 birds peaking in early January. Other ducks frequenting the lake are green-winged teal, ring-neck duck, ruddy ducks and coot. Most of the large flocks are last observed in late March at Pungo as is true of Mattamuskeet. Incidentally, population peaks occur at Pungo later than at Mattamuskeet and there is evidence of some shifting of birds from Mattamuskeet Lake to Pungo Lake in late winter.

A small number of black ducks and wood ducks nest on Pungo Lake. Management practices, it is hoped will entice nesting by geese, blacks, mallards, wood ducks, gadwalls and blue-winged teal.

As you would expect, waterfowl, while of prime importance, are not the only wildlife in the area or for which the area will be managed. Upland and big game including quail, rabbit and deer will benefit from management. Doves too, it is hoped, will increase to huntable numbers in the future.

Furbearers such as mink, muskrat and others common to eastern North Carolina are present at Pungo and management plans for this resource includes reasonable harvest by trapping.

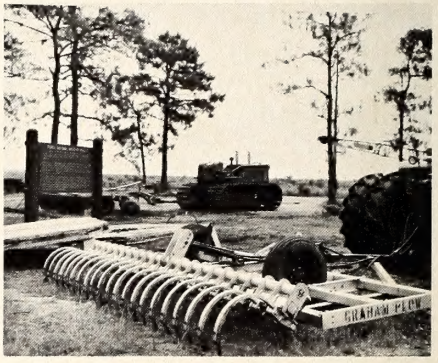
The acid water of Pungo Lake is suitable mainly to gar and channel catfish. However, manipulation of the water will perhaps enable the establishment of a good bass and panfish fishery.

FUTURE development of Pungo Lake National Wildlife Refuge includes hunting, trapping, fishing, sight-seeing, nature study, photography and picnicking. To facilitate these various types of recreation, boat ramps, towers, shelters, trails, roads, an information center, hunter access, parking areas, etc., will be constructed.

There has been scattered hunting on the lake in the past and in the surrounding fields. Hunting in the refuge area was closed in October of last year. Hunting will not be permitted this year but there is a remote possibility for the following season. Hunting can probably be done in the area now by agreement with various landowners.

The 12,300-acre refuge is composed of 2800 acres of water, 7,000 acres of agricultural land, 2,125 acres of timberland and 360 acres of marsh. The various habitat types will be managed for the purpose that each is best suited. Some will remain in a natural state as it should. Part of the agricultural land is presently in a farming condition, 1200 acres of which is farmed on a cooperative fifty-fifty basis by local farmers. The refuge part of the crop is normally left for wildlife. This cooperative program is expected to yield $200,000 per year in gross receipts to local farmers.

Refuge Manager, James M. Dale, who presently resides in Plymouth said that the refuge will change from year to year with the continuation of cropland improvement, forest management and the addition of a visitors center, residence, head-



Evidence of fire-scarred cypress is piled on a ditch bank (above). Charred logs make clearing of land difficult. A battery of farm equipment stands ready (below).

quarters and of course more of all types of wildlife. The latter of the facilities improvements will come as funds are appropriated.

Although with each passing year there will be more to offer, Manager Dale assured the writer that visitors are welcome at anytime. Mr. Dale maintains an office in Plymouth and a field office at the refuge. N. C. Highway 99 north from Pantego or south from Plymouth is the main route to the area. In the vicinity of Wenona, the visitor would turn east toward the lake.

Anytime is a good time to visit Pungo Refuge. What you see will depend on how closely you observe. Deer tracks along a dirt road, a covey of quail nervously crossing in front of the car, remnant stands of cypress, a muskrat swimming along a canal, or a sentinel-looking white heron standing along the lake shore. Anytime is a good time but right now a trip to Pungo would warm the heart of anyone, especially if he thrills to the sound of Canada geese or chattering mallards.

In the days ahead other arrivals will join those already pre-

• **continued on page 27**

Migration

by Lunette Barber

FASCINATING and forever new is the subject of migration —that mysterious journeying when some animals pass periodically from one region or climate to another for feeding or breeding, and for man, perhaps comfort. Theories and more theories have been introduced and discussed down through the ages to account for the reasons for migration of animals, including chiefly birds, fish, mammals and insects. Perhaps more has been written and said about bird migration than all the other animals that migrate.

The season of beauty and harvest is here now. Have you missed the presence of any of your summer visitors, friends, or neighbors recently? If so, watch for newcomers to fill the vacancy because they are sure to come. The ruby-throated hummingbird from as far away as Alaska, winters in southern Mexico and Central America. Then if a very interesting and valuable little bird that feeds on the wing, entirely in the air, the chimney swift, built a nest and raised its young in your chimney last summer, it will return this fall to the region of the Andes in Ecuador and Peru to spend the winter.

But the real "globe trotter" is the Arctic tern. This bird breeds abundantly in North America and crosses the Atlantic Ocean to and from the Old World, glimpsing four continents, and tries to act almost like an astronaut. Evidently the Arctic tern enjoys more hours of daylight than any other creature in the world—nesting in the Arctic region and wintering in the Antarctic. Marvelous! Its speedometer registers 25,000 miles per year.

We read, write, think about, and see migrants, but probably the most popular, best-loved and most conspicuous is the Canada goose. How interesting and thrilling it is to watch flocks of them come into North Carolina each fall. There are not too many places they evade entirely. To the sportsmen the most popular concentration is at Lake Mattamuskeet, under the management of the U. S. Fish and Wildlife Service, Department of the Interior. For the aesthetic and bird-watchers, Gaddy's Pond in Anson County is the favorite "Goose Inn" during winter. The poet, artist, writer, photographer, ornithologist, sportsman, and observer will agree that the Canada goose is one of the greatest "objects of Nature."

Not all the journeys for the migrants are full of pleasure nor do they all end safely. Many face dangers in hurricanes, sudden storms, fogs, and lights, especially lighthouses, and airplane beacons. Then there are obstructions such as high buildings, bridges, piers, telephone and electric wires. And for some, the hunter's gun.

Many fish migrate. Freshwater eels live in inland waters, but in autumn the adults go to salt water, the Sargasso Sea, to spawn and there they die. They never breed in fresh water. It took a Dane, Johannes Schmidt, more than 15 years of hard study to determine the facts pertaining

to the eel's travels. So it may be seen that the eel's life-cycle is the reverse of some of the other fish such as the striped bass (rockfish) and shad.

A choice salt-water fish, the striped bass, comes from the ocean and spawns in the Roanoke and a few other coastal rivers of this state. The North Carolina Wildlife Resources Commission has helped out the spawning program by operating a striped bass hatchery at Weldon on the Ronaoke River. There the eggs were hatched and the fry removed to the river where they traveled to the salt water.

In recent years, the Wildlife Commission has changed the migratory pattern of many of these fish. By stocking some striped bass in Kerr Reservoir, they became land-locked and when spawning time came, they could not go to the ocean. Instead they have ascended the Dan and Staunton Rivers and have done well. Young stripers are numerous in Kerr. And have made the fishermen happy because the period for catching them has been extended considerably beyond the spring spawning peak.

The shad is a popular salt-water dwelling fish that comes to fresh water to spawn. Its favorite rivers seem to be the Neuse, the Tar and the Cape Fear. Along with the birds, the fish have their difficulties in migrating—siltation, pollution, nets, low water and fishermen.

The monarch butterfly, too, becomes travel conscious with the seasons' changes. Each fall some of this species fly South, and many of them make the return trip of 1,000 miles or so to the North the following spring.

Some mammals migrate. The bat, the only flying mammal, is the outstanding land migrant in North Carolina. Then we would not forget the comings and goings of the porpoise and whale along our coast.

Most any encyclopedia gives interesting facts on migration; the subject makes good reading. Even man finds it less necessary to travel today for food and comfort as he once did because air-conditioning, scientific heating, and supermarkets have changed his way of life too. ◆

Currituck Sound News Release

Intensive studies of the Back Bay-Currituck Sound area by wildlife and fishery biologists reveal the great importance of controlling salt water concentrations as a means of increasing waterfowl utilization while retaining or improving existing fresh water fishery resources of this important recreational area.

Gradual decline in waterfowl use of this famed section of Virginia and North Carolina has been intensively studied during the past six years in a cooperative effort of the Virginia Commission of Game and Inland Fisheries, the North Carolina Wildlife Resources Commission, and the Bureau of Sport Fisheries and Wildlife.

Field activities begun in 1958 were completed in April 1964. A final detailed report of over 1,000 pages is scheduled for completion in the near future and a condensation for public distribution will be prepared after the issuance of this report. Meanwhile, certain findings from these studies will be of coniderable interest.

Two principal factors were found to be responsible for decreased waterfowl utilization of the area. First, scarity of desirable food-producing submerged aquatic plants limited the number of waterfowl using the area. Second, fluctuations in the continental waterfowl populations influence relative usage.

Currituck water samples are checked during routine operations on the project. Of particular interest was the salinity of water.

Various environmental features, including salinity, turbidity, and siltation, are the primary factors limiting growth and abundance of submerged

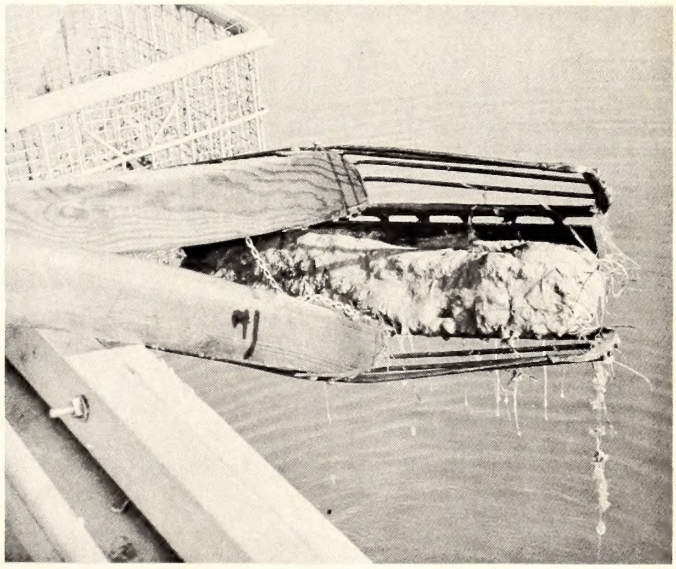
aquatic plants in the study area. Siltation detrimentally affects aquatic plants by smothering action or by providing too soft a substrate to adequately support plant roots. Excessive turbidity reduces penetration of sunlight, thereby limiting plant growth. It was found that proper salinity levels accelerate the settling of silt and stimulate the growth of desirable waterfowl food plants. Data analyzed thus far indicate greatest benefits to aquatic plants in the study area result from salinities of 10 to 15 percent sea strength.

Sport fishing in the Back Bay-Currituck Sound area is primarily for fresh water fish and provides some of the better largemouth bass fishing in North America. Since control of salinity levels appeared to provide the most promising means of improving waterfowl foods, it was necessary to determine the effects of varying salinities on the largemouth bass population. Laboratory and field studies indicate that, although adult largemouth bass can tolerate higher salinities, their successful reproduction is greatly reduced by salinities in excess of 10 percent sea strength.

The Atlantic storm of March 7, 1962, breached the barrier dunes of the study area and introduced large quantities of sea water. As a result, the study was extended for two years. Investigations during this period verified the earlier study findings in regard to effects of salinity on waterfowl food production and on bass reproduction. In addition, it was found that certain rooted aquatic plants died in salinities greater than 35 percent sea strength, and that fish kills occurred in salinities greater than 40 percent sea strength.

An extremely important consideration relating to introduction of salt water in the Back Bay and Currituck Sound was demonstrated by the 1962 storm. This is the fact that sea water does not readily mix with fresh water. Therefore, the introduction of necessary amounts of sea water to provide salinity levels of 10 percent sea strength in the study area could produce detrimental areas of high salinity unless adequate mixing could be obtained.

Thus, the biological studies completed so far demonstrate that waterfowl food production of the study area can be increased without detrimentally affecting the largemouth bass fishery. However, accomplishment of these goals is dependent on the carefully controlled introduction and mixing of proper amounts of sea water. Whether such controlled introductions are practical or feasible can be determined only through careful study by qualified hydrologists and engineering. ◆



A. W. DICKSON

Special "oyster tongs" were used to gather bottom-type samples (above) and vegetation samples. Amounts and species of vegetation were carefully noted for the various sample areas.

Gunmanship

by John Madson and Ed Kozicky

Since the days of buckskinned frontiersmen, gun handling has been a part of America's way of life. Do it safely.

A real rifleman lived in our town. We boys held him in great awe, for he had shot in the national rifle matches at Camp Perry and knew more about guns than any other man in our small world.

One day a boy showed him a birthday .22. The man took the little rifle, carefully opened the action, and inspected the chamber to see that it was empty. He then sighted the rifle and pronounced it "a beaut."

The boy asked: "How come you opened the bolt? My gun ain't loaded."

The old rifleman replied: "In the first place, it ain't a gun. It's a rifle, and I figured it wasn't loaded, but didn't know *for sure*. And because you handed me the rifle with the action closed, *neither did you.*

Since then we've watched many such men, and their gunmanship. When they handed a gun to another man, the gun's action was open. It is one old gunner's courtesy to another—and the unwritten law of never taking anyone's word that a gun is unloaded. Our point is simply this: the *real* shooter never takes chances. He never relaxes his vigilance when he handles firearms. Thus it must be with boys.

Boys and guns go together as naturally as boys and dogs. But when a boy becomes a shooter, he must put childish horseplay behind him. When the young shooter is entrusted with a gun, it means that someone believes he is old enough to use it safely and well. His gun is a man-sized responsibility. He should use it as often as possible—for shooting skill is honed with practice—but always remember that a gun is a man's tool and not a boy's toy. A good gun, used with proper ammunition is no more dangerous than an axe or saw. It is only a tool. It is the person handling the gun who makes it dangerous or safe.

Never miss a chance to go afield with experienced shooters. But beware going afield with guns and other youngsters. Sure, your buddies are interested in shooting. But it's not your job to teach them. Unless you have capable adult supervision, don't go shooting with kids who have little or no gun training. We know many grey-haired hunters who pick their field companions on the basis of safe gun-handling and not just friendship alone—which is one reason they've lived long enough to have grey hair.

You must always be watchful when dealing with guns and gunning, but there are certain times when you must be doubly alert:

- When you've had just enough experience to think you know all the answers, and grow careless. You may "know" the answers, but have your subconscious mind and reflexes been thoroughly trained in safe gun-handling.
- When you're carrying a gun over rough country, windfalls, ditches, fences, or handling a gun around home, camp or car.
- During a plinking session when everyone is out to have fun and burn ammo, and someone is tempted to "horse around."

- Late in a hunt when everyone is tired and reflexes are dulled and gun-carrying becomes sloppy.
- During the hunt when game appears. This burning excitement cannot be duplicated in a hunter safety class or training range. Anticipate this great excitement, and double your caution when it comes.

If a hunting companion ignores safety rules, tell him about it. He may be a close friend, but when he is careless with his gun he is careless with your life. This is a deadly insult. It simply means that he doesn't care enough about you to handle his gun properly, or take the time to learn how. If he doesn't mend his ways, limit your friendship to a ball diamond or swimming pool.

As you would never trust an "unloaded" gun, never trust a gun that is on "safe." A safety catch is only a mechanical device, and devices fail. It is the least reliable of a gun's safety features—far more important are your own good judgement, skill and the ingrained habits of safe gun handling. Of course, part of that good judgement dictates proper use of your gun's safety catch. It should be "off" only as you are actually shooting, and should be snapped "on" as you lower the gun from your shoulder. It is a good idea to finger the safety while hunting—to check it constantly with your fingertips to make certain that it is engaged.

When you handle, carry or shoot a gun, do it in a way that keeps you in full control of the muzzle. Keep that business end pointed in such a way that if the gun goes off, you'll have nothing to regret. The cardinal principle of gun safety is never to point a gun at anything you do not wish to shoot. There are no exceptions to this rule.

At all times, know exactly where your shooting companions are. In the field, be constantly aware of their location and never relax your vigil over your friends. Guard them against shooting danger; you'll also be guarding yourself.

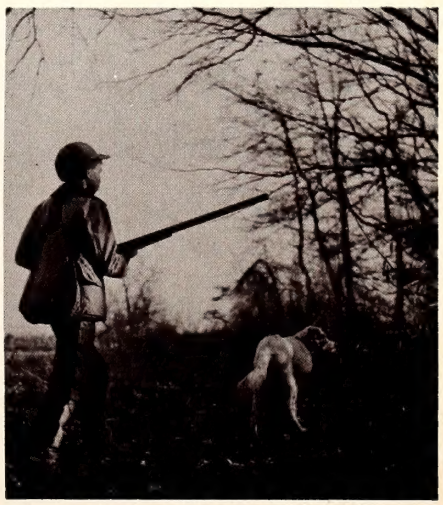
Never take loaded guns into an automobile, house or camp. There is no good reason to. Sure, we know about burglars, chicken hawks and things that go "bump" in the night. And we repeat: you have no good reason for keeping a loaded gun in camp, car or house.

The National Rifle Association has developed an outstanding hunter safety program, with qualified instructors. There's probably a hunter safety course available near your home. Drop a postcard to the Wildlife Commission, Raleigh, and find out. The N. R. A. Hunter Safety patch on your hunting coat is something to be proud of, for it implies that you have learned the rules of a game where mistakes can't be corrected with an eraser.

When a boy is given his first gun (or given the right to earn it), he is paid a great compliment. It means that the father trusts his son's judgement, that he is inviting him to share men's games in a man's world, and that he recognizes his son as having grown beyond boyhood.

Your dad is right. You may not yet be a man, but you're more than a boy. Don't let us old folks down.

What is gunmanship? It is made up of many things, some a bit difficult to describe. It certainly includes a knowledge of firearms and a respect for them, as well as an awareness of the rights of others. It is an attitude toward gun handling that means safety and sportsmanship at all times. Gunmanship is up to you.



Caswell County Quail Club

by Ralph E. Sadler and Milas L. Green

JACK DERMID

Want better hunting? Here's a plan that has worked for one group of sportsmen in Caswell County; maybe it will for you.

IN the fall of 1963 a group of sportsmen who realized the precarious position of the bobwhite quail in Caswell County met and organized the Caswell County Quail Club. Modern farming practices in the county have all but eliminated many of the things that are necessary to support a normal quail population. As you travel over the county today, you will find that the pastures are kept grazed very close, and the old crooked rail fences are gone. With the absence of adequate cover, predators often take their toll of the quail population. Dogs and stray cats probably destroy more quail in Caswell County than all of the other predators together. Owners of these animals could help by keeping their dogs chained or fenced in during the nesting season.

There are two things that man can do which will help increase the quail population in any area. He can provide adequate food and cover for the birds. Both food and cover are essential during the winter months and cover is of extreme importance during the nesting season. Restocking is not the answer to our problem because food and cover must be available before any quail can survive.

The North Carolina Wildlife Commission distributes free to the residents and landowners of North Carolina, multiflora rose seedlings which provide excellent cover if planted and managed as recommended. Shrub lespedeza and sericea will provide cover and food for quail when most of the low growing plants are covered with ice or snow. These two plants will last for several years when they are planted and given adequate care for the first two years. In addition to the seeds mentioned, the Commission distributes large quantities of annual mixture to those desiring it. One limiting factor here is that it is only good for one year; yet, many people prefer it because it requires less work at planting time.

AFTER discussing the situation in the county, the Quail Club voted to sponsor a wildlife contest for the F. F. A. boys in the county. This was to be a contest to see what boy or boys would do the best job of providing food and cover for wildlife on their home farm. As an added incentive, the club was to award an automatic shotgun as first prize and a double barrel shotgun as second prize. Membership fee was set at $10.00 per member to cover the cost of these guns and one steak supper for the members.

Club officials wanted to make it clear that participants did not have to sign any agreement to let club members hunt on their farm. It was hoped that this would indicate that the club members were interested in improving hunting in all parts of the county for everyone—not just club members. Therefore, any student was eligible to participate whether his father's land was posted or not, and regardless of where he lived in the county.

Since we were teachers in the local high school, we were asked to be in charge of the contest.

Richard Eggleston, District

Biologist with the North Carolina Wildlife Resources Commission met with the F. F. A. boys and others who were interested to discuss the planting materials that could be obtained from the Wildlife Commission. This discussion included where to plant, what to plant, how to plant, fertilization, time of planting and management after planting. All boys were encouraged to plant all the materials they could get. Many of the boys with the help of their fathers bought seeds from local seed stores and used some of the seeds produced on their home farms in addition to what they received from the Wildlife Commission. This was brought out very vividly during the judging.

In 1964 the boys received the following materials from the Wildlife Commission: 200 units of annual mixture, 50 units of shrub lespedeza plants, 30 units of shrub lespedeza seed, 80 units of sericea seed, 4,000 multiflora rose seedlings.

This material was delivered to the agriculture department at Bartlett Yancey High School for distribution.

With the help of Mr. Eggleston, we prepared a scoreboard which the board of directors approved for each contestant to fill out before the preliminary judging was done.

At their fall meeting each club member was asked to help with the preliminary judging in order to pick the top eight boys from which the top two would be chosen by judges selected from outside the club. During this preliminary judging, the club members were very favorably impressed with the results of the contest. The farms represented cover all areas of the county. The final judging was done by Earl Sanders, Caswell Refuge Manager; Richard Eggleston, District Biologist; and David Hopkins, Soil Conservationist in the county. After a very long day of walking, riding and seeing what the top eight boys had done, the judges reached their decision about nightfall. These gentlemen certainly did a good job of judging and competition made it difficult to reach a decision.

IN order to create more interest in the program, Dorsey Bradner, 1965 president of the Club and Dr. T. L. Gwynn past president, presented the automatic shotgun to Tommy Underwood and the double barrel shotgun to Jack Pointer, Jr. at an assembly of the entire student body at Barlett Yancey High School. The club gave 20 one-year subscriptions to *Wildlife in North Carolina* to the top 20 boys in addition to the shotguns.

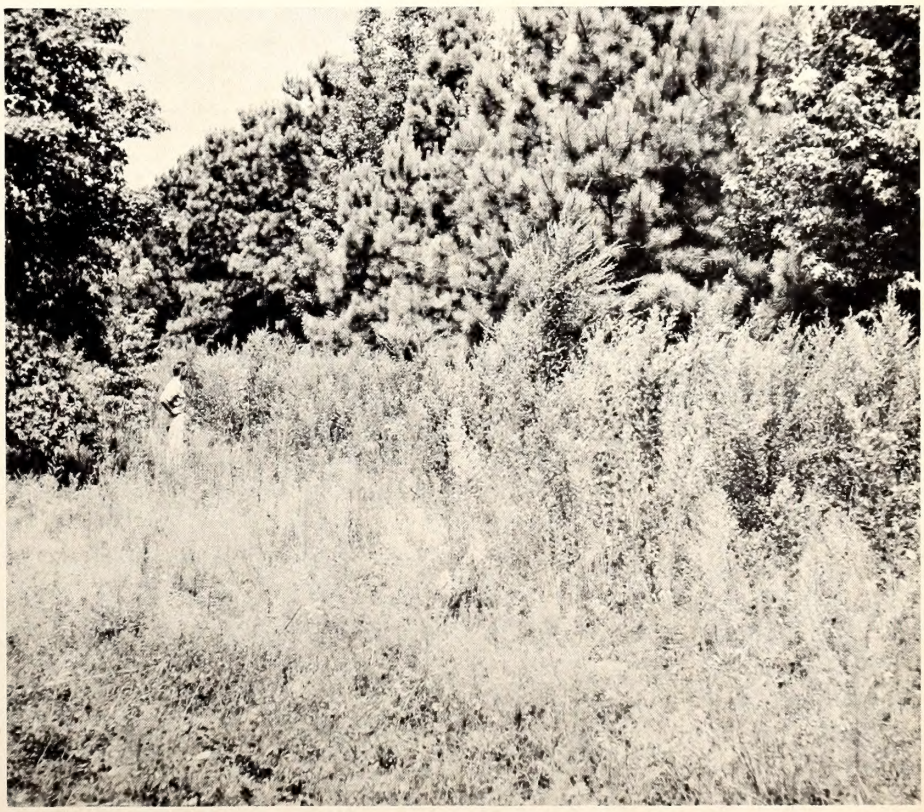
This year a list of recommendations and other helpful suggestions was prepared and given to each contestant to help him to do a better job. The value of fertilization and planting of perennial materials as well as annuals was stressed.

As of this date the boys have received and planted the following materials from the Wildlife Resources Commission: 249 units of annual mixture, 64 units of shrub lespedeza plants, 112 units of shrub lespedeza seed, 160 units of sericea seed, 9,000 multiflora rose plants.

This represents a 20 percent increase in the annual mixture; 120 percent increase in the shrub lespedeza and sericea plantings. This is the direction that everyone wants to go. With a better than 100 percent increase in the number of multiflora rose planted, there is a very good indication that the boys and their parents are beginning to see the value of permanent food patches and cover for quail. The planting for the two-year periods represents 56 acres of annual food patches, almost 52 miles of shrub lespedeza (which would be a row from the Alamance County line to the Virginia line) and two and one-half miles of rose plantings.

The Caswell County Quail Club is sponsoring the contest again this year with the hope that each contestant can be visited by one of the club members to see what he has done and to talk with his parents.

The boys stated that they found quail in the food patches at least 75 percent of the time when hunting in the fall and winter. Mr. Ken Wilson, Area Supervisor of Wildlife Refuges visited Tommy Underwood in February of this year. He remarked that this was a wonderful program and the club should keep it going. ⬍⬍



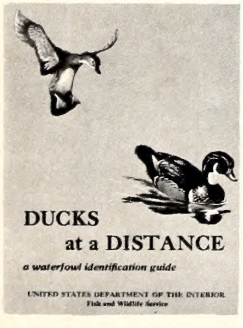
Quail need places to live and feed like this patch of shrub lespedeza in the woods. The birds will soon find them.

This is a flight of
Pea Island. The in
are part of an ext
owned by W. G. "B

GREATER SCAUP

LESSER SCAUP

Bonus Ducks



NORTH CAROLINA
WATERFOWL IDENTIFICATION GUIDE

THE ATLANTIC WATERFOWL COUNCIL

Identification of ducks in flight is often difficult even for the seasoned duck hunter, and just about impossible for the beginner. This year's waterfowl regulations permit the shooting of "bonus ducks" in certain coastal waters of North Carolina. These areas are shown in a general way in color on the map at right. The regulation is printed as footnote 6 in the regulations on page 15, and has to do with "scaup"—the greater and lesser scaup or bluebills. This bonus duck regulation places an even greater responsibility on the hunter to identify his bird before he shoots. Scaup can be confused with other of the diving ducks, particularly the ring-necked duck, also known as ringbill. Study the regulations, the map, and the photos of the birds in question. Two booklets, "Ducks at a Distance" and "Waterfowl Identification Guide" (pictured at left) are available as long as supply lasts from Division of Education, Wildlife Commission, Box 2919, Raleigh 27602.

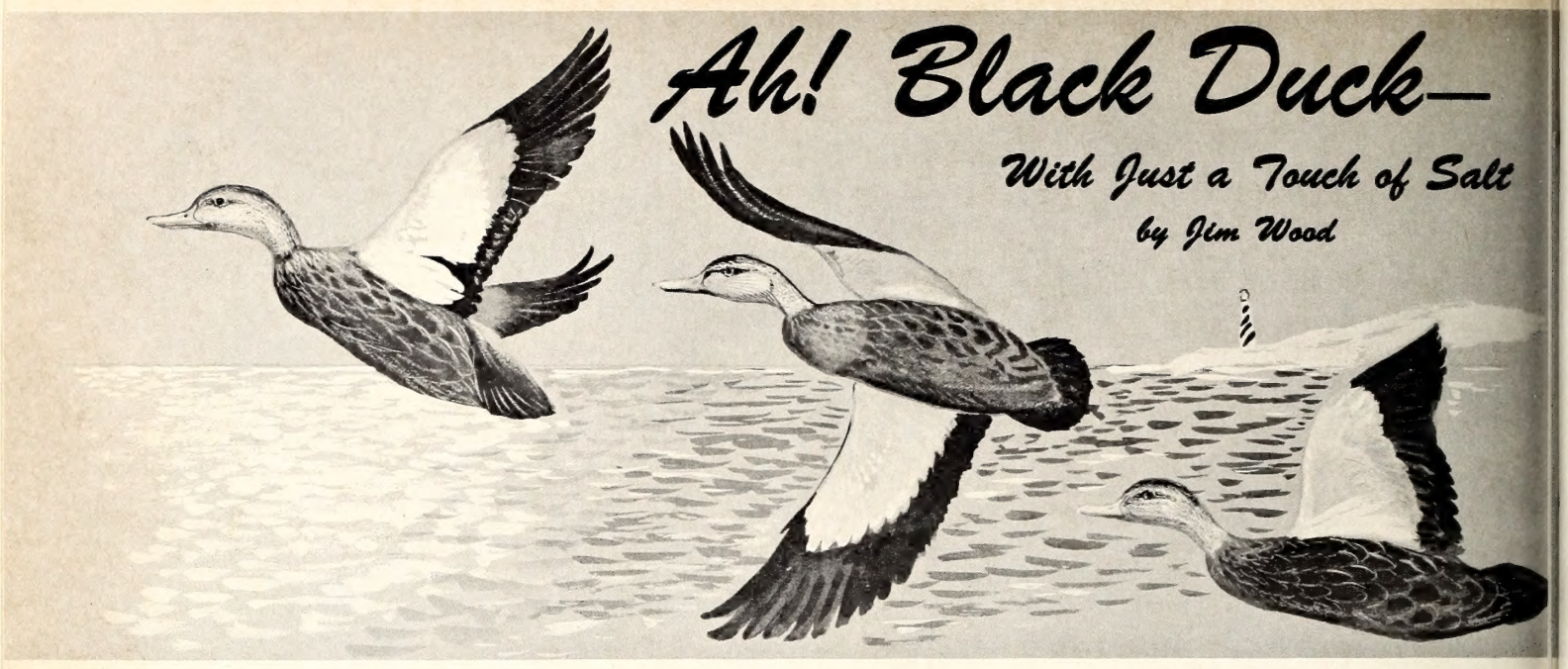
ked ducks sweeping over
caup and ringneck shown
llection of mounted birds
k of Raleigh.

RING-NECKED DUCK

N. C. MIGRATORY GAME REGULATIONS 1965-66

Species	Open Seasons Dates Inclusive	Shooting Hours	Daily Bag	Possession Limit
Dove	Sept. 11-Oct. 16 Dec. 11-Jan. 13	12:00 Noon to Sunset	12	24
Rails, Sora and Gallinules	Sept. 20-Nov. 28	Sunrise to Sunset	15	30
Woodcock	Nov. 20-Jan. 8	Sunrise to Sunset	5	10
Wilson's Snipe	Nov. 20-Jan. 8	Sunrise to Sunset	8	16
Geese(1) (7)	Nov. 6-Jan. 14	Sunrise to Sunset	2	4
Brant	Nov. 6-Jan. 14	Sunrise to Sunset	6	6
Ducks	Nov. 20-Jan. 8	Sunrise to Sunset	3(2) (6)	6(3)
Coot	Nov. 20-Jan. 8	Sunrise to Sunset	10	20
Hooded, American or Red Breasted Merganser	Nov. 20-Jan. 8	Sunrise to Sunset	5(4)	10(5)

(1) Closed season on snow geese.
(2) May not include more than 2 wood ducks; 2 mallards; or 2 canvasbacks.
(3) May not include more than 2 wood ducks; 4 mallards; or 2 canvasbacks.
(4) May not include more than 1 hooded merganser.
(5) May not include more than 2 hooded mergansers.
(6) A bonus daily bag limit of 2 and possession limit of 4 scaup ducks will be permitted in addition to the regular bag and possession limits on ducks in coastal waters designated as commercial fishing waters east of U. S. Highway No. 17, except that this bonus will not be allowed in Core Sound between Drum Inlet and Harkers Island, in Pamlico River upstream and west of a line between Pungo River and Goose Creek, and in Currituck Sound north of U. S. Highway No. 158.
(7) Over the public waters of Currituck County, the open season on geese shall open on November 20.



Ah! Black Duck—

With Just a Touch of Salt

by Jim Wood

A number of years ago when I first met that old rascal called a black duck he failed to make much impression on me; but I have long appreciated that I don't own that quirk of mind that some men unfortunately have to live with, that lets first impressions be final ones. This is one flaw that I don't want above all others, and in this instance would have been the end of me and black ducks. I shudder to think about not ever having known this fine duck better.

I was on the Jersey coast at the time. Far across the salt tinged marsh grass to the south the pleasure boxes of Atlantic City's hotels were almost painted out in the distant haze. The two came out of a little slough with hardly enough water to wet their feet and I killed both of them. Getting the two on one rise had nothing to do with my initial feeling for them: these blacks were tough flyers, well schooled in their ancient ways of airmanship, and left my heart down keeping my feet warm as ducks always have. I was a little lucky too.

I got them home, tore off their jackets, and my wife had them in the oven the next evening an hour before I got home. The house was completely soaked with the smell of duck when I opened the door, and I am grateful it hadn't yet seeped outside and roiled up the neighbors. It wasn't hard to tell these birds had been enjoying their seafood, and in quantity. My wife went unconcernedly about her business with the evening rush feeling the odor was a bit strange but that all black ducks must be that way, and already decided she didn't want any.

I didn't either but we didn't have to toss them out the back door. Not long before dinner an old friend dropped in and we naturally invited him to eat although dinner looked pretty sparse by now. A little too lengthy stop at a tavern on the hill had left him in a jovial frame of mind, and what's more, ravenous. He spied the blacks sitting there in the roaster coated in crustiness, magnificent to look at. He ate both of them, fish and all, declaring they were the best ducks he had ever eaten.

Since that time the black duck has heightened his name to just about tops in my thoughts. These blacks along the Jersey shore had just run out of what they like to eat, and were subsisting on what they could get. The final judgment on any duck is what he is like coming from the pan and sometimes, but not often, does the black let you down. When he does you can be sure that times are hard, that the season for his regular vegetable eating is past.

On not much else is he short of either, and though eastern gunners pour it on him hard each fall, he usually comes back with zest. The teal is fast and as tricky a fellow with wings with feathers as there is but his IQ matches his smallness. Scoters take some skill that some men don't have including me but on the table he loses all the points he ever won. The wood duck is full of color to gaudiness and like gaudy women you soon tire of looking at him. The black duck is the gentleman duck. A loud coat just wouldn't fit him. He needs no such nonsense to announce his importance.

THE black duck is an eastern duck. It is a bit of a shame that all men who love waterfowl can't get acquainted with him and maybe in generations to come he will manage to top the sheerness of the Rocky mountains. But it is fortunate that we have him; the black and his clan is in many cases the only one that allows our Atlantic duckmen to put many eating ducks on the table

in some parts of the flyway where mallards are scarce and teal gone south before the shooting starts.

Each fall he shoos his gangly youngsters to the south, some early, in the air disturbances of the teal; and all along he is welcome. Gunners shoot him right on down from Quebec to the south, they roast him and fry him, eat him and love him for what he means to them. It matters little that he is a Canard Noir in the French Canadian patois; it is with the same reverence that he is called black duck in the bay towns of New England, the lonesome in winter-summer towns of Jersey, and the wildness of the Carolina coast.

Legends have sprung up in all ages about those things that catch a man's fancy, and the wariness and intelligence of the black duck has earned him his share, many of which he deserves. Some men say in seriousness that this old fellow can smell. I have seen no evidence that he can, but he does many things so well that I just assume he can to be on the safe side. I hope he can enjoy this sense which is often a joy. Smell or not, he has acted on occasion as if he smelled something and as far out from the decoys as he shied it must have been bad. Things must look pretty good before he lands, and the thing that must never enter his mind—or he is gone forever—is man.

A young friend of mine grumbled that black ducks wouldn't decoy. I think that he had been reading too many tales, by men whose awe of the black had gotten out of hand, instead of working on the problem. These tales persist today and were common forty years ago. I have a decoy that sits in the senior spot atop my gun cabinet. It was cut out of cedar just about forty years ago, by a favorite duck hunter of mine, and is as black as night. If this decoy could talk it would tell of some awful days with black ducks.

This is not to say that he will fall over anything, but he can be decoyed, and things must look well. I have seen black ducks in the decoys so thick you would have thought live decoys had been legalized; and often they are wary, so touchy you couldn't get one in if you had a hundred live ones sitting before you. Men have hunted these years who yet plunk their blocks in the flat black pot and they get ducks, and regularly. I know the flat painted ones work, but I have a notion that if a decoy looks like a duck to me then it will look like a duck to a duck. Besides most of the trouble is in getting them set out proper. This makes them look more like a duck than anything.

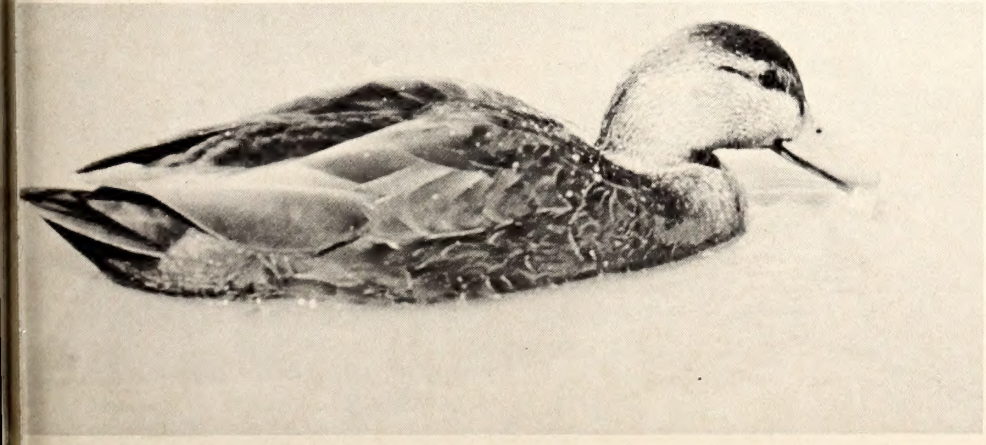
Late one summer I was hacking blocks into fourteen-inch lengths for black duck decoys and these ended a month later with a good bit of work as some pretty good decoys. I rasped the smelly cedar down smooth, cut the proper lines of wing and tail, one dipping a drink of water, a couple of hens with their mouth open talking in the usual manner, one head this way, another that way. After these hours of work I wasn't going to settle for anything but the best I could do.

A couple of friends dropped by to lend some "expert" advice on decoy building of which they knew nothing and they were a little puzzled that the black ducks weren't black. In truth the black duck isn't black. He just looks that way when he is a little ways off from you. Unlike most ducks the drake and the hen wear the same togs, and up close the dusky streaks run down his jaws, dark on top of the head and through his eyes as if he had been mascaraed a bit. The body is still heavier in duskiness. The bill yellows with age from the olive, the feet redden, and with the wings at rest if you see no white you can be sure it is a black. He has a rich sheen all over and you can see this if you see a mallard swimming near one.

BLACK ducks were officially split into two species years ago, and since that time the why's have been argued heatedly by hunters, and authorities too, but the facts are not very substantial for two species of black ducks. Atlantic duckmen were happily shooting bags of just plain old black ducks until 1902 when a fellow named Brewster ran onto what he considered a separate kind of black duck. The red-legged black he called him.

Anyone can make a mistake of course. A young painter named Audubon had done something of the same thing in 1822 when he discovered a new breed he nam-

The black duck can be a study in frustration to the waterfowler. It may take a near perfect setup to fool him. Unless you know what you're doing, better go easy on music from the duck call.



ed the Brewers duck after his old friend and ornithologist, Tom Brewer. Audubon settled it however after some twenty years when he learned the truth, and the species was dissolved. The Brewer was in fact an offspring of a mallard that had mistook a gadwall for a spouse. The red leg controversy is yet strong, but most learned duck men and scientific folks agree that a black duck is just a black duck, and where the red legged legend began was from the older birds who have a habit of staying longer in the north and are in heavy winter dress when they come south.

Boosters of two species claim intelligence of the red leg is sharper but this is not a strong claim. Old ducks are more intelligent or they wouldn't be old ducks. Atlantic gunners went on shooting blacks without pause, sometimes in joyful confusion, but proud to get either one. Brewster caused a ruckus, but he didn't dull their fervor.

To get into a flock of these oldsters is pure delight and work too if you aren't careful. An old ducking pal of mine and I used to work our fingers nubby late in season lugging the heavy cedar decoys across a field not long thawed and just muddy on top from the sun at noon, to a spot we knew. We set the decoys in the shallowing saltiness of the bay, and often we got some black duck shooting. Often there would be other birds to shoot and one great day I remember with the blacks was moments after a flock of whistlers had finished making complete fools of us. The trouble with a whistler is that you know he is coming a long while before you can see him and you are just too ready.

We could hear these a long ways off, wing beats coming strong through the cold air sounding like a wagon wheel that hadn't been greased since 1918. Finally the musical troupe hove into view and straight across the decoys, but holding what altitude they had. We loosed a couple shots apiece and shouldn't have. We missed.

Fortunately we didn't have time to start making excuses on why we couldn't hit a whistler straight up and with little wind. I grumbled a little, Paul didn't have time to, and the blacks were upon us. They were about a dozen, one or two more maybe, as we had little time for counting, and heading down the middle of the cove. We hugged the wall of the blind trying to get into the cracks. Trying to hide and see at the same time is impossible but all duck hunters try it.

The blacks reversed course wide when they caught the decoys in their eyes and in moments wings were cupping and red legs dangling. Lower, feeling for the water, and we were on our feet shooting and blacks were feet up on the water among the wooden Judas ones. Five big blacks, slick in fatness, are enough for any two men unless they haven't had a mess of duck since last year. No use sitting in an ice box if you have what you came for, and the temperature fell a degree each time the sun moved.

We hauled in the decoys, stuffed them in burlap bags, and stumbled across the now hardening field with several more pounds than we carried in. If it sounds as if these black ducks were easy in battle it is just that the quickness of shooting comes somehow different on paper. We had to use a couple more shells to make sure they stayed where they were put and we were shooting a twelve and sixteen gauge as full as a merganser in a trout farm. These blacks weren't showing much of that ancient reputation for wariness this afternoon but the ones that flew on you can be certain had developed some sharpness of eye from the hail of lead. At times they manage not to use common sense as all of us do but are not inclined to do it again.

KENNETH ROBERTS whose pen put together such immortal books as *Northwest Passage,* was enthusiastic in his quest for all kinds of food and drink, and black duck shooting was the only kind of duck shooting that had interest for him. His favorite black eating was taught to him by an old Maine man who lived from the land and a frying pan with a chunk of salt pork. He cut off a slice of pork, slapped it into a blue hot frying pan, wiped it about a couple times and plunked duck breasts in with it. Three minutes to a side, no more, no less. This is good duck, crusting on the surface, juicy red inside.

A hot oven will do the same job. It will take a bit longer and a "hot" oven. Roberts claims that the breast of a duck is all that is fit to eat, and maybe he was thinking of the chore of picking one when he said this. A duck is largely breast anyway but you can't stuff a breast and I like a duck once in a while with his skin on and some stuffing in him. This holds his juiciness in better and he is something to look at coming out the oven door. Never roast a duck without an orange; keep him surrounded with a haze of juice all the while he is in the heat.

Some folks make too much of duck that is cooked until it is done, saying that you can't eat it as a steady diet. But a steady diet of duck is one thing most of us have little to worry about unless we are poaching or retired. A pot of turnips was first invented to go with roast duck. Some are compelled to haul out the wine bottle but you need little to whet the appetite for this feast. A good pot of coffee made as if coffee wasn't being rationed is quite enough. I used to try to keep a couple hanging on the back porch in season for emergencies but it was useless. When the emergencies came, the ducks were gone.

There is no magic in hunting the black duck but there is a skill required, the skill of patience and immaculateness in all your hunting ways. His haunts are not special. You might find him in water with just a little salt, a lot of salt, or none at all. This fellow travels all along the Atlantic coast and is prominent on the Mississippi Flyway. A report I saw very recently said he is steadily enlarging his roaming grounds, so somebdy can start counting their blessings. ◆

The Skipper

Conducted by John Parker

ODDS and ends are the subject for this month's Skipper. Some of the items may be of interest to you. As this is being written, the Labor Day weekend has just recently, unofficially, closed out the boating season. Many of you, it's true, recognize no closing of the boating season. You will boat through September, October, and in November, you will still be at it.

And there is no reason why you shouldn't be. Just as you, this boater well knows the joys of fall fishing, traveling to the hunting area by boat, etc. Let us all remember, however, that North Carolina waters are starting to chill. Capsizing and falling overboard create serious situations at anytime, but now and later in the season, such a situation could be fatal if for no other reason than because its just plain cold. Crude as it may sound, let's face it, the life preserver (please use one) may just make the body more accessible to the rescue squad. So for the months ahead, use all of those summer safety practices and because of old man winter, toss in another boat-load of precaution.

New Access Area Regulation

The Wildlife Commission now has 79 boating and fishing access areas for free use by the public. Most boaters welcome these additions to the over-all program of boating facilities, including public and privately owned areas. Some few boaters have abused this use and have created hazards at the Commission areas due to excessive speed, careless operation, etc.

For this reason the Commission has amended the access area regulation to read "No person shall operate a motorboat in the public waters of North Carolina within fifty (50) yards of a Commission-owned or managed boat launching ramp at greater than, 'no wake' speed. For the purpose of this regulation, 'no wake' speed shall mean idling speed or a slow speed creating no appreciable wake." This is a reasonable regulation. It is intended to promote safety at these areas and should do just that. No wake speed in congested areas is one of the best ways of keeping the boating scene looking safe and sane.

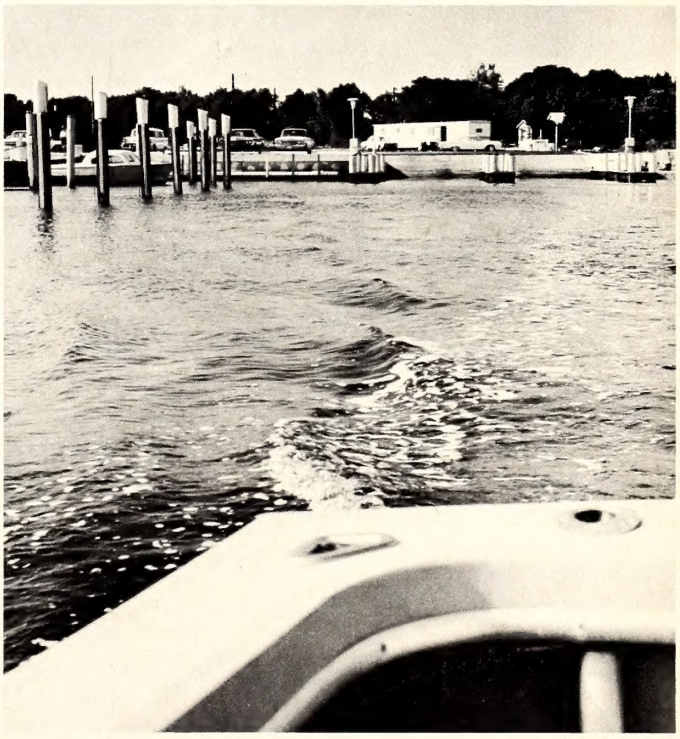
Practice no wake operation with your own rig. Remember no wake and slow are not always the same. The largest of recreational type boats can be operated with no wake if throttled back to where there is just enough speed to maintain steerageway. After all, that is all you need in a congested area.

Fees Dropped

Another of the odds and ends type of boating news means money in your pocket if you frequent one of the state-owned lakes. The Department of Conservation and Development's Division of State Parks, until the recent General Assembly, had the authority to charge annual fees ranging from $1.00 for a rowboat to $30.00 and up for commercial excursion boats operated on these state-owned lakes. In short, the fees will not exist after January 1, 1966, and no one seems upset over losing the revenue previously derived from the fees. This too seems like a good move; let's keep the actual use of public water as free as possible.

Boating Accidents Up

The boating accident, better discussed in terms of boating safety, is always considered most important for this section of *Wildlife in North Carolina.* It will be the first of the new year before we begin an over-all analysis of the 1965 accident picture.



JOHN PARKER

The wake created by this 20-foot inboard-outboard is about maximum for docking or access point. Leave a calm harbor behind; excessive wakes can damage moored boats and shoreline.

Fouled Lines

We don't know what a Class 4 motorboat is either. The lead paragraph in the Skipper for October should have read as follows: The State Boating Act requires that Class 2 and 3 motorboats, all motorboats carrying passengers for hire, inboard motorboats or outboard motorboats with closed construction have aboard one or more fire extinguishers of an approved type.

JOEL ARRINGTON

Mattamuskeet Honkers

by Lea Lawrence

"GEESE may be among the most intelligent creatures alive," Dave remarked as he poked shells into his automatic, "and I am not at all sure that human beings constitute much of a threat in the area of competition."

His voice was partially drowned out by the clamor of honkers that were winging away in the opposite direction from our blind. All were healthy, unscathed and they numbered exactly the same as they had when they approached us from the other direction.

"What's more," he added somewhat bitterly, "I would go so far as to say that they can read, precisely estimate shotgun ranges, and comprehend mathematical matters far beyond my area of understanding. If I were to see one scanning the newspapers for the exact sunrise and sunset schedules, I would be not at all surprised."

"It wasn't really all that bad, Dave," I said. "We just missed them slightly, that's all."

"A slight miss is about the same as a slight hit with geese," he replied. "Neither one has much effect."

That we had failed to score was understandable. It had been the first pass of the morning, and for both of us, the first pass of the season, too. And I had learned again a lesson which had been taught me on the first shooting of every goose season for years on end: One must mentally knock himself in the head in order to remember that just because a goose looks as big as a bomber, it is managing to move through the air with considerable rapidity. I may have personally under-led more opening day geese than any man living.

We were sitting in a blind in a ditch between a picked corn field and a soybean field. A couple miles to the north lay Lake Mattamuskeet, the goose capital of the entire Atlantic Flyway. And from that center of activity I could see flock after flock of big birds moving off the lake. The action had just begun.

I caught Dave's movement as he ducked a split second before I heard him hiss: "Down!" And I had hardly the time to get hold of the pump gun before three Canadas swept low over us and banked sharply to the left, flaring as they turned.

We didn't have to decide to shoot—both of us raised in unison and blasted away. I picked the bird on my side, saw it rock as the first charge struck home, then toppled it with the second shot. Dave had sent his bird end over end on the first shot, then fired the remaining two shots after the third goose, which was still speeding away.

THE honker had a remarkable curative effect on Dave, and he was smiling broadly as he returned to the blind with the two geese. I have seen limits of geese cause men with ulcers to eat hearty meals, and it can also cure ailments such as headaches, depression and short tempers. Geese have great medical value.

There was a momentary lull in activity, so we sat back and smoked a cigarette. Dave and I have a peculiar homing instinct for this fabulous North Carolina coastal region; much, in fact, like that of the Canada geese and whistling swans which make their way back each year. Presently I have a five year straight attendance record going, and I have no plans for breaking the winning streak.

Dave had poured himself a cup of coffee, and I stood up to scan the sky around us for movement. It was a bright, clear mid-November day—or it was shaping up toward that. In the distance small patches of fog were drifting over the tree-tops as they moved off the lake and the lines of geese continued to pop out of the mist and slip away like wisps of smoke.

The clamor of geese was everywhere; deceptive, as they always are, with flocks hundreds of yards distant sounding as though they were practically dropping into the blind. Sometimes a single honk was sufficient to send us into a quick stoop, seeking the shelter of the brush around the top of the blind.

I had nearly lost myself in the beauty of the morning—and of the geese, when I caught in the corner of my eye the nearness of a flock which had shifted direction and zeroed in on our set of decoys. I called once, then again, and dropped my call as I realized that the birds were dead set on swinging over us low enough for an easy shot. Dave was

motionless beside me, and I thought I could hear the beat of his heart as the flock moved in.

I lost my senses again—missed the first shot and made the serious mistake of switching to another bird. It took two more volleys to send it spinning down into the corn field. And it still had enough vigor left to get up and begin a run that terminated only when I neared the end of my sprinting ability and pounced upon it with a long jump. Dave had put three successive shots into a big honker and it stayed put when it touched the ground.

"One more to go," I panted, "although I must admit that I hope my marksmanship prevents me from having to exhibit again my limited talents in the area of track and field sports."

Dave's previous dejection had disappeared and in its place had grown something I suspected to be closely akin to cockiness. His reply strongly suggested this, at least.

"Knock 'em dead, as the 'Old Master' does," he smiled. "And there's no running involved. I might mention, in passing, that this honker beside me has several shot placed accurately in his head!"

"Then it must have been flying backwards," I answered, "since your usual lead ends up doing damage to their rudder section. You have accomplished the extraordinary, anyway."

Both of us should have kept our mouths shut and our eyes open. As we traded remarks a pair of Canadas slipped over our heads and only sounded off when they were just at the fringe of maximum shotgun range. What we poured after them did little more than give them an additional burst of speed.

THERE'S something about missing a goose that fails to drop me into the dejection that a missed quail or a dove often brings on. Perhaps it is because I get involved in watching it depart, and in marveling, again, at the grandeur of this majestic species. Anyway, there was a smile on both of our faces after we had scored complete misses and glanced back toward each other.

I've hunted from coast to coast, seeking big game, upland game and waterfowl, but in my estimation this region offers a sportsman's bonus found in no other locale. And it has always seemed strange—although very pleasant, too—that so few hunters are aware of this fact.

Take waterfowl, for example. There's a complete representation of ducks, large, small, puddle ducks or divers, and an equal diversification when it comes to hunting methods. One can pole through the marshes, shoot the flooded timber areas, shoot over decoys on the lake, hunt the grain fields or try the Outer Banks offerings. It's almost the same with geese. Then there's woodcock, snipe, rails and gallinules—and even the coots for those who favor them on the table. Quail, squirrels and rabbits are plentiful, and the dove shooting is terrific. Add a big deer population, bear, and to the north a bit, turkey, and you have a menu that any hunter would delight in. And if I were planning to digress into fishing and seafood, I could compile a list that would shine just as brightly.

Of course, seafood on the table is a part of the lure of region for both Dave and I, since we live inland and have to "catch up" during our annual hunt. "Catching up" is a subtle way of saying that we make pigs of ourselves, for it is impossible to wander down the table at Axson Smith's River Forest Manor at Belhaven, where we headquarter, and find yourself with eyes considerably larger than your stomach.

With things standing at two and two, Dave and I felt that we needed but one flock to wind up the shooting for the day. What piled into the decoys wasn't such a flock, but a single goose that was already on the ground before either of us saw it. It recognized its error at about the same moment and while I waited for Dave to take it and he waited for me to take it, the goose flew away quite unbothered. And it's hard to cuss each other out for being gentlemanly.

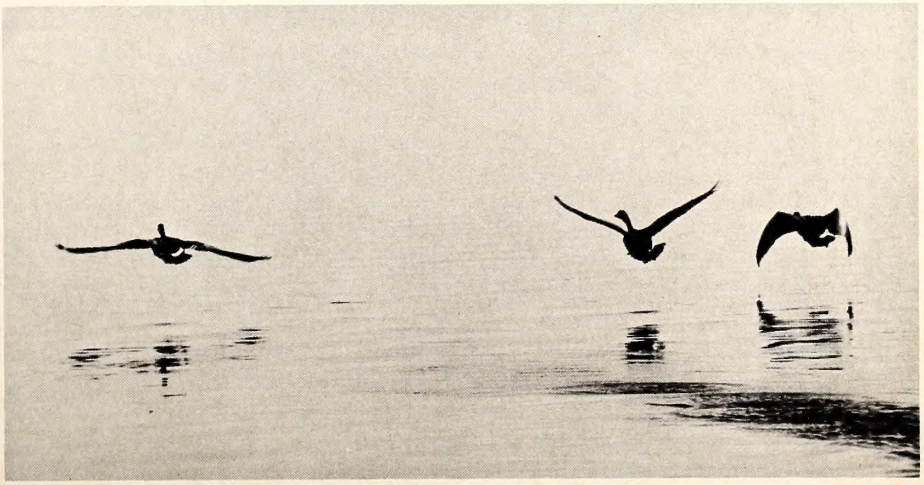
Perhaps our virtue paid off. At any rate, a flock of five, apparently dead set on returning to the lake, responded to our calls and zeroed in on the decoys. They didn't even make a pass; it was a stright in move. Two shots later the hunting was over and we sat back and relaxed over a cup of coffee. It was thoroughly relaxing, because we had another day's hunt ahead, and the afternoon before us for just wandering around the area and taking photographs.

Dave glanced skyward at a long skein of geese headed for parts unknown, their honking fading to a murmur as they moved away. He took a long draw on his pipe, leaned back against the side of the blind and remarked:

"You know, all my life I've heard talk of the 'happy hunting ground.' Now I know exactly what it means—I'm there!"

A trio of Canadas fans the surface of Mattamuskeet. This is part of the magic and thrill of hunting the majestic bird.

JACK DERMID



"There's Wild Boar in Them Thar Hills"

by John P. Hardister

Here's the story of a real tough customer, the wild boar. These photos were made available by Fred Brockmann, owner of Blue Boar Lodge, Robbinsville.

"YES, there's wild boar in them thar hills," the old mountain man declared as he puffed contentedly on his homemade pipe. "Why I can recollect the time when . . ." he continued, as pleasant memories of past hunting experiences stirred within him and prompted the beginning of another tale of mountain men and of the wild boar they hunt. But we must leave the old mountain man and his exciting tales for another time as there are indeed wild boar in the mountains of western North Carolina, and the hunting season is open *now!*

Before discussing the areas where wild boar may be found and the various methods of hunting them, let's briefly describe the physical characteristics and nature of this highly desirable big-game animal. Wild boar are about the size of black bear and mature animals may weigh over 300 pounds. The body build resembles that of a buffalo in that they have short necks, stand higher and heavier at the shoulders, and possess relatively smaller hindquarters.

The snout is longer than that of the domestic hog; the ears are small, pointed, and hairy; the legs are slender, and the tail is long with a tuft of hair at the tip. The skin is covered with a coarse hair of heavy bristles from the top of the head down the back to the hips.

In winter a thin coat of fine wool lies beneath the bristles and protects the animal from the rigors of winter weather. Body color is usually coal-black but may vary from grey to brown and even piebald individuals have been reported. A pair of curved canine tusks protrude from the lower jaw. The matching canines of the upper jaw curve upward instead of downward and grind against the lower tusks, honing them to a razor-keen edge. These formidable weapons, varying in length from two to eight inches, are capable of disemboweling an adversary with a single swipe of the head.

Although vegetation constitutes the main part of the diet, wild boar are omnivorous. Their diet includes acorns, plant roots, tubers, grains, fruits, and whatever small animal life the boar might find. Feeding takes place primarily at night. During the day wild boar prefer to bed-down in rhododendron or other appropriate thickets.

Small bands of wild boar are not uncommon although mature males tend to remain to themselves and seem to prefer a solitary life. Wild boar are alert animals, quick to respond to danger, and they are extremely fleet-footed. Their keen sense of smell and almost equally keen sense of hearing are efficient at warning them of impending danger and make up for their poor eyesight.

THE exotic wild boar was first introduced into the mountains of western North Carolina in 1912. Approximately fifteen of the beasts were imported from Germany to stock a private preserve on Hooper Bald in the Snowbird Mountains of Graham County. In the early 1920's these animals and their offspring escaped into the surrounding wilderness and established a wild population that has spread until the present range includes several adjoining counties and part of eastern Tennessee.

The Santeetlah Wildlife Management Area lies within the heart of the present wild boar range in Graham County. Wildlife on this 37,880-acre tract of U. S. Forest Service land is cooperatively managed by the North Carolina Wildlife Resources Commission. Within the boundaries of the management area, wild boar are protected from both the poacher and free-ranging dogs.

Each fall managed hunts are held for wild boar and bear. Dogs may be used on the two-day party hunts which begin during the middle of October with dates extending through the first week of December. Individual still hunts for wild boar and buck deer are held during the latter part of November and continue on a daily-hunt basis through the first part of December. Wild boar may also be hunted on nearby U. S. Forest Service and private lands in accordance with "statewide" regulations set forth by the North Carolina Wildlife Resources Commission. Hunters are requested to seek the per-

mission of the landowner before hunting on privately-owned land.

Within recent years wild boar herds are reported to have done a considerable amount of damage to the natural vegetation within the Great Smoky Mountains National Park. Under the terms of a cooperative agreement between the National Park Service and the North Carolina Wildlife Resources Commission, wild boar are live-trapped by park personnel and given to wildlife protectors for supplementing established herds in Graham County. In this way, wild boar wholly protected within the boundaries of the national park, are made available to the hunter. Since 1962, 61 wild boar have thus been transplanted from the Great Smoky Mountains National Park to the Santeetlah-Snowbird area. Under a similar agreement with the Tennessee Game and Fish Commission and the Park Service, 29 wild boar have been transplanted since 1960 to the Tellico Wildlife Management Area, located across the state line adjacent to the Santeetlah Wildlife Management Area.

Prior to release, all transplanted wild boar receive a numbered, metal ear tag. Wildlife biologists tag these animals in order to secure basic information which will lead to better management of the species and ultimately provide better sport for the hunter. The recovery of tagged individuals through the efforts of cooperative hunters will provide information on longevity, home range, aging methods, and movements of the animals. By returning ear tags the hunter actively participates in the management of the species.

Eagerness on the part of the dogs often replaces good judgement. A wild boar can hurt you and may well kill a dog.

COOPERATIVE studies conducted by wildlife biologists in North Carolina and Tennessee have already revealed valuable information with regard to the above factors. This has resulted from the recovery of 21 tagged boar from cooperative hunters. Many gaps remain and additional tag recoveries are needed to supplement our knowledge of these animals. One fact seems reasonably clear at the present time: as far as is known, none of the tagged individuals returned to their former home range within the National Park.

As an added incentive for recovering tags from hunters the North Carolina Wildlife Resources Commission will issue one free-use permit for one day of hunting wild boar on the Santeetlah Wildlife Management Area to those sportsmen submitting tags along with the necessary information regarding the kill. Hunters are requested to submit tags to refuge personnel at Santeetlah.

Basically there are three methods that one might successfully use to hunt the wild boar. These methods are commonally known as: (1) the "stand"; (2) the "stalk" and; (3) the "chase." Let's discuss each of these methods briefly.

The "stand" method begins with the spacing of hunters at pre-selected places in the hunting area. Guides look for fresh boar "sign" with the aid of dogs on leash. When a fresh trail is found one or two of the dogs are released to locate and rouse the boar from his lair. Faster and more furious barking tells of the beginning of the chase and is the signal to release the remainder of the pack. The success of this method of hunting depends upon the dogs chasing the boar past the hunter waiting at the "stand." The experienced guide possesses a good knowledge of the habits of wild boar and can often determine in advance where the boar is likely to go. He selects his "stands" accordingly, so as to run the boar past one or more of the hunters in his party.

The "stalk" method requires all of the skill and craftiness the hunter possesses in order to be successful. Few hunters attempt the stalking of the wild boar from his lair because of the difficulties he must overcome in matching wits with the animal in its natural habitat. Another form of this type of hunt involves finding fresh trails, beds, or feeding areas and waiting in concealment for the boar to arrive on the scene.

The "chase" is perhaps the most thrilling and dangerous method of hunting wild boar. Unlimited stamina on the part of both men and dogs is a prerequisite for success when this method is employed. The hunter must be able to travel full speed on foot over rough terrain often for hours at a time before the boar is brought to bay. Experienced dogs will hold a wild boar at bay until the hunter can arrive on the scene provided he is not too far behind. Dogs lacking in experience or those that are careless often do not live to hunt again when a mature boar is encountered. When the hunter arrives on the scene he had better be prepared to dispatch the boar at the earliest possible moment for when the animal sights the hunter he will likely disregard the dogs and charge. When this happens it is every man and dog for himself. No one can predict what a wild boar will do under any given circumstance. This unpredictability is but another one of the many factors the hunter must accept and face when he encounters the wild boar.

"Yes, there's wild boar in them thar hills," we say in echo to the old mountain man's words. The hours spent in search of the elusive wild boar in its scenic mountain habitat, noteworthy for its rugged beauty and splendor, will provide you with pleasant memories in future years. Then *you* can begin tales with the phrase, "I recollect the time when . ." ◆

NORTH CAROLINA WILDLIFE

RESOURCE-O-GRAM

A ROUNDUP OF THE LATEST WILDLIFE NEWS

November Biggest Hunting Month

During the month of November the hunting season is open at some time and some place in North Carolina on every game species on the books except mourning doves. With the first segment of a split dove season opening September 11 and the season on raccoon and opossum ending March 1 in most of the state, North Carolina boasts one of the longest hunting seasons in the nation—and does not require special licenses for taking particular species, especially big game.

Goose, Duck Season Begins

The goose season opens November 6, statewide except on the public waters of Currituck Sound where goose hunting will be delayed until the opening of the duck and coot season November 20. Bag limit on geese has been reduced from three daily to two daily, with equivalent reduction in the possession limit. Three ducks are allowed daily, six in possession with a bonus allowance of scaup in specified coastal areas (see map, center spread).

Rabbits, Quail, Wild Turkeys Legal Game

The season on rabbits, quail and wild turkeys opens on November 20 statewide except that there will be no open season on turkeys in and west of Stokes, Forsyth, Davidson, Lincoln and Gaston counties, nor in Anson, Beaufort, Carteret and Pitt counties. Limits on rabbits: 5 and 10, 75 per season; quail 8 and 16, 100 per season; and turkeys 1 and 2, 2 per season.

Don't Forget Christmas Gift Subscriptions!

Attached to this issue are subscription blank forms you may use for giving subscriptions to Wildlife in North Carolina as a Christmas gift your friends will receive 12 times a year. A 25% discount will be given on Christmas orders of 25 or more subscriptions.

Time to Order Wildlife Planting Materials

Another bumper crop of seeds and seedlings for wildlife habitat plantings is being harvested by the Wildlife Commission. Persons wishing to obtain these free of charge may do so by making application to local SCS offices, County Extension Service offices, district game biologists and wildlife protectors or Division of Game, Box 2919, Raleigh, N. C. 27602.

DEPARTMENT OF LETTERS TO THE EDITORS, FIELD NOTES, AND ITEMS OF INTEREST

Conducted By Rod Amundson

Although the month of November is not an especially good time of the year for recreational boating, it might be a good time to do a little thinking about how North Carolina's boating facilities can be improved. Most of the 80 boating access areas developed over the years by the Wildlife Resources Commission have been paid for with fishing license funds. During only the past year or so has a small fraction of money received from boat registration been used for boating access area development.

Meanwhile, the heaviest use of these access areas has been made by people who simply like to go boat riding or water skiing. These people have a right to expect public access to public waters. Thus far, however, the boating fisherman has paid most of the bill for these access areas. He doesn't mind this because it has been a service to him. But he can reasonably expect his nonfishing counterpart to pay at least some of the bill. The latter would like to, but how?

Both groups want more boat launching facilities; both want more boating safety law enforcement and more boating safety education. Since both groups are composed of reasonable people who enjoy outdoor recreation, it can be assumed that both are willing to pay the cost of better services, greater recreational opportunities and more security of life, limb and property.

We are faced with four immediate needs where boating is concerned: more boat launching facilities; more boating safety law enforcement; more boating safety education, and more navigation safety devices. As time goes on, other needs will arise, and like the four already mentioned, these needs will cost money.

During the last five weekends of the summer vacation season, Tarheel wildlife protectors "cracked down" on boating law violations. The Commission's airplanes teamed up with patrol boats on the water to maintain radio-monitored surveillance on the state's busier waters. This, surprisingly, met with the enthusiastic approval of the boating public. But more significantly during those five weekends only one fatal boating accident occurred. This happened when a small boat was swamped by periphery winds of Hurricane Betsy despite small craft warnings.

Although access to public waters now is far less a problem than it was years ago, we still need additional boat launching facilities.

Obviously, more money is needed to improve boating facilities and to cut down on the loss of lives and property. Where will the money come from? An increase in the boat registration fee would be an obvious source, but this would raise very little money, and be highly unpopular with the people who pay the registration fee.

These same people, however, contribute a considerable amount of money to the General Fund through the payment of a tax on the motorboat fuel they burn up. Unless they fill out the necessary forms to recover six cents per gallon on the fuel they use, this money goes to the construction and maintenance of our highways.

During the 1965 General Assembly, legislation was proposed to allocate three-tenths of one percent of motor fuel tax money to boating facility use, but this legislation was never introduced. The legislatures of a growing number of other states are utilizing this logical source of revenue for boating facility improvement. Here is a brief index of what other states have done:

ALABAMA: 35/100 of 1.0 per cent of total gasoline taxes, excluding aviation fuel tax, is earmarked annually for boating facilities construction, enforcement of pleasure boating laws, and commercial and sport fishing purposes.

ARIZONA: Department of Motor Vehicles conducts statistical survey every three years to determine how much motor vehicle fuel tax revenue comes from boating. The amount thus determined is used on a matching basis with county funds to develop boating facilities.

INDIANA: Any balance in motor fuel tax fund at the end of the year attributable to boating is supposed to be used for waterways improvements, navigational aids, and enforcement of pleasure boating laws.

MICHIGAN: 1/2 of 1.0 per cent

KNOW YOUR PROTECTOR

Charles D. Peterson

Wildlife Protector Charles D. Peterson stationed at Richlands in Onslow County, a son of the late Mr. and Mrs. Paul D. Peterson of Clinton, North Carolina. He is a graduate of Clinton High School and attended Louisburg College.

He completed the Pre-Service Training School for Wildlife Protectors at the Institute of Government at Chapel Hill in 1956. On February 1, 1957, he was employed by the Division of Game as Assistant Refuge Manager on Croatan Wildlife Management Area near Maysville, North Carolina. He transferred from that Division to the Division of Protection on July 1, 1961 and has attended six In-Service Training Schools at the Institute of Government.

Protector Peterson is a member of the Southeastern Assoc. of Game & Fish Commissioners, a National Rifle Association Hunter Safety Instructor, a member of the Richlands Junior Chamber of Commerce, a Thirty-second Degree Mason being a member of Seaside Lodge #429, New Bern Scottish Rite Consistory and Seaside Chapter #238 Order of the Eastern Star.

He is married to the former Delia Ann Daughtry of Clinton, and they have a daughter and two sons. The Petersons are members of the Richlands Baptist Church.

DIVISION ENFORCEMENT RECORD FOR JULY, 1965

HUNTING & FISHING

Persons checked	22,673
Total prosecutions	693
Total convictions	677
Total cases not guilty	11
Total cases nol prossed	5
Totals cases dismissed	0
Total fines collected	$2,276.20
Total costs collected	$5,701.45

BOATING

Boats checked	14,349
Total prosecutions	441
Total convictions	425
Total cases not guilty	10
Total cases nol prossed	5
Total cases dismissed	1
Total fines collected	$ 664.45
Total costs collected	$4,027.00

All fines and any arrest or witness fees are paid into the school funds of the counties in which the violations occurred, and no part of the fines or costs collected are paid to the North Carolina Wildlife Resources Commission or its personnel. ◆

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of total motor fuel taxes, excluding taxes on airplane or diesel engine fuel, goes for the development of boating facilities on navigable waters.

MINNESOTA: 3/4 of 1.0 per cent of motor fuel tax revenue is estimated to originate in boating. Unrefunded marine fuel tax, or not less than $500,000 per year, is split between development of waterside state parks, public access, and boating law enforcement.

MONTANA: 1.0 per cent of total motor fuel taxes goes to state parks which are used for motorboating.

NEBRASKA: $10,000 per month in gasoline tax revenue is used, on a matching basis with counties, to build or improve access roads to recreation areas where motorboating is permitted.

NEW HAMPSHIRE: Unrefunded motor vehicle tolls are made available for boating safety promotion and law enforcement.

NEW MEXICO: 2/10 of 1.0 per cent of total motor fuel tax funds is earmarked for boating facilities in state parks.

OHIO: 1/2 of 1.0 per cent of annual motor fuel tax receipts is used for the construction of boating facilities.

UTAH: Each fiscal year an amount equal to the tax on fuel used in boats registered in Utah in the previous calendar year is transferred to the state boating fund. Average gallonage consumption is figured at 100 gallons per year.

WISCONSIN: $100,000 annually is appropriated from the highway fund for access roads to navigable waters.

Safety Measure

Dear Sir,

In the article *Doves . . . the Hard Way* September, 1965 the accompanying pictures showed the hunter firing his muzzle loader. Fine, this is a delightful hobby. I hope that I am not the only one to call attention to the fact that the shooter did not have on protective eyeglasses. The percussion cap as you know often fragments and along with bits of powder, droplets of oil etc. can cause very unpleasant irritation or injury to the face and eyes. Please advise your muzzle loading readers to wear glasses when they shoot.

For those who do not have calibrated powder and shot pouches you might add this. Take a joint of bamboo (from an old cane pole perhaps) to the corner drug store and have the druggist weigh out on his scales the exact charge in powder and shot. Put these in the bamboo, measure one section of it for powder and cut it off flush. Do the same for shot. Now you have a quick and accurate means for loading the same charge time after time.

Thank you for many vicarious pleasures. Name witheld by request.

Follow the Leader

DEAR SIRS: A very interesting topic came up in a recent discussion of Canadian geese with a friend in Michigan. Perhaps you can help us.

We were wondering if the leader ever changed places while flying their familiar "wedge" formation. It was observed that some geese did change position; but we did not know if the head leader ever dropped back while migrating or whether he maintains the lead position.

Secondly, we would like to know where one might obtain some young geese or eggs. B. CRUMP, 1424 WEMBLERY DRIVE, CHARLOTTE

Usually, V-formations of migratory birds are led by the

strongest flier. The theory is that the turbulence set up by the leading bird aids the flight of those following in eschelon behind it. Most observers think that when the lead bird tires, another takes its place—Ed.

(P.S. We don't know of a source of young birds or eggs).

Available

The Wildlife Commission has prepared a pamphlet entitled "Safety for the Hunter" aimed at cutting hunting accidents. This pamphlet is available at no cost by writing Hunter Safety, Box 2919, Raleigh, N. C. 27602. Write today.

PUNGO

• **continued from page 6**

sent. Starting a long gliding descent perhaps a mile from the lake each flock will act as one great bird with wings motionless. There will be an occasional shifting of birds in formation and an occasional quick dipping of wings which reminds one of a man on a tight rope attempting better balance. Then comes the most interesting, most beautiful falling-leaf performance as the flock loses altitude rapidly and touches down on the lake surface. Wings are tucked away, there is brief excited conversation which perhaps is a congratulatory message to each other on the succesful flight. Then all is quiet and still but for intermittent preening. The geese have returned to Pungo. This time they were perhaps seen by a man on a tractor, a family driving a nearby road, a fisherman or a biologist. You too can see them and hear them at the sign of the wild goose. ⬍⬍

The duties of a Wildlife Protector include just about everything from water rescue to movie projectionist. And their training covers each task they are expected to perform. Here, a group of District 5 Wildlife Protection personnel study the workings of motion picture projectors.

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Sex and Age of Wild Turkeys in Fall and Winter

Knowledge of age and sex of turkeys harvested is essential to sound management of this species. Only gobblers can be legally killed in North Carolina. Too many adults in the bag may be a danger signal (low productivity). A high proportion of immature turkeys indicates good productivity.

AGE

IMMATURE
Several middle tail feathers longer when spread.

LENGTH OF TAIL FEATHERS

ADULT
All tail feathers even length when spread.

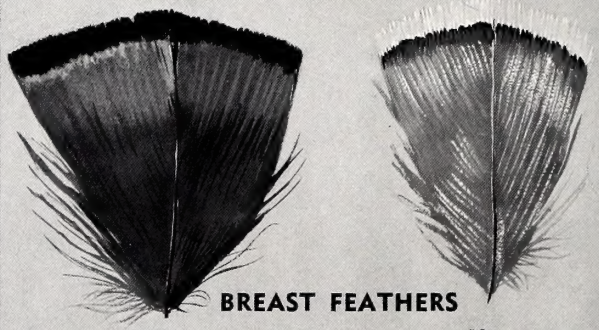
TIP OF OUTER WING PRIMARY

ADULT
Tip rounded, white bars 1" or less from tip.

IMMATURE
Tip pointed no white bars within 1½" to 2" of tip

SEX

Presence or absence of beard and spurs are not always reliable indicators of the sex of turkeys. Hens occasionally have beards and/or spurs. Immature gobblers (hatched last summer) will begin to grow beards during the winter and will seldom have ones which protrude through the feathers until late winter. Immature gobblers will have no spurs or only "buttons." The most reliable external distinction between sexes is shown below.



BREAST FEATHERS

Gobbler
Black Tip

Hen
Buff or brown tip

In good light, gobblers appear much darker than hens when in shooting range. Make sure!

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Wildlife IN NORTH CAROLINA

DECEMBER, 1965

KARL MASLOWSKI

Christmas Seal?

No, but you're reasonably close; it's a river otter. And he must have been in a snowball fight from the looks of things. Anyway, Merry Christmas!

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WILDLIFE IN NORTH CAROLINA recognizes the need for close cooperation between State and Federal conservation agencies and the people who hunt and fish—to bring about a restoration of our renewable resources. The Editor gratefully receives for publication news items, articles, and photographs dealing with the North Carolina out-of-doors, but reserves the right to reject materials submitted. Full credit is given for all materials published.

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DECEMBER, 1965 VOL. XXIX, NO. 12

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The coat of the white-tailed deer is made up of an outer layer of coarse guard hairs, and an undercoat of softer, shorter hairs. The color varies from season to season, and may be a somber gray to a reddish brown. The pelage is in best condition during early winter and often becomes pretty worn and a bit "moth-eaten" during the warmer months. This month's cover photo of a nice buck was taken by Karl Maslowski.

This is the story of a group of eager youngsters, a dedicated leader, Howard Robbins (right) and conservation's future.

Junior Outdoors Club

by Bodie McDowell

SMALL in number, small in size, but *big* in action. That statement pretty well sums up the Junior Outdoors Club, a Greensboro organization of youngsters eight to 15 years of age who are learning first hand of nature and conservation of the country's natural resources.

This didn't just come about overnight, but has taken years of work by the dedicated Howard Robbins, a businessman who gives of his time, efforts, and money to instill in the youngsters a desire to learn about the resources and to practice conservation methods.

Robbins was told a year or so ago that his group is the only club of its type east of the Mississippi River. He would be the first to volunteer if other adults throughout the east would step forward to start working with the children as he has. "We've had no problems whatsoever with the boys and girls," says Robbins, "and we take a trip every Saturday, winter and summer, rain or shine. Meetings are twice a month and the kids operate the whole show."

The club has no affiliation with wildlife clubs or state organizations, but has in the past few years received some help from the Greensboro Recreation Commission and the Greensboro Sertoma Club. They've never actively solicited a cent and don't intend to. Of course, they never turn down help whether it be funds, time or materials such as books and equipment. You will find donations of books on nature particularly welcome if you wish to contact Mr. Robbins.

It started almost as an accident some nine years ago when Robbins and a couple of his friends took a group of 21 children fishing at Greensboro Country Park. The next Saturday even more children wanted to take part in an outdoors activity.

"This thing just mushroomed from that first Saturday fishing trip," Robbins said. "We went somewhere every Saturday for the remainder of that summer and then we organized the club that fall." (Right now the club has a waiting list of eager youngsters since it must limit membership.)

"I want to get one thing straight right now," he continued. "The credit for the success of this club doesn't go to me. It belongs to the children. The only difference between me and them is that they are young and I'm 50 years old. We've been learning together through the years. Since I don't play golf or shoot pool, this Club is my recreation. You don't deserve an award for simply pursuing your recreation!"

"I'm not an educator, I still murder the King's English, but we've learned a lot through the years." He may not be an educator, but there are those who will tell you that he has done an excellent job with the boys and girls. His methods probably wouldn't be looked on with favor in a school system, but they do

Kelly Culbreth points to an insect exhibit which contains a Cercropia moth he caught. At right, Wildlife Refuge Manager Earl Sanders shows the club members a cannon net for catching wild turkeys. A raccoon pelt prepared by one of the girls in club is examined by Jack Winchester (left) and Dan Dixon.

produce results. And it's as simple as A, B, C. If a child comes in with some mineral or animal and wishes information on the project, Robbins quietly and patiently explains to the child that he must look it up for himself.

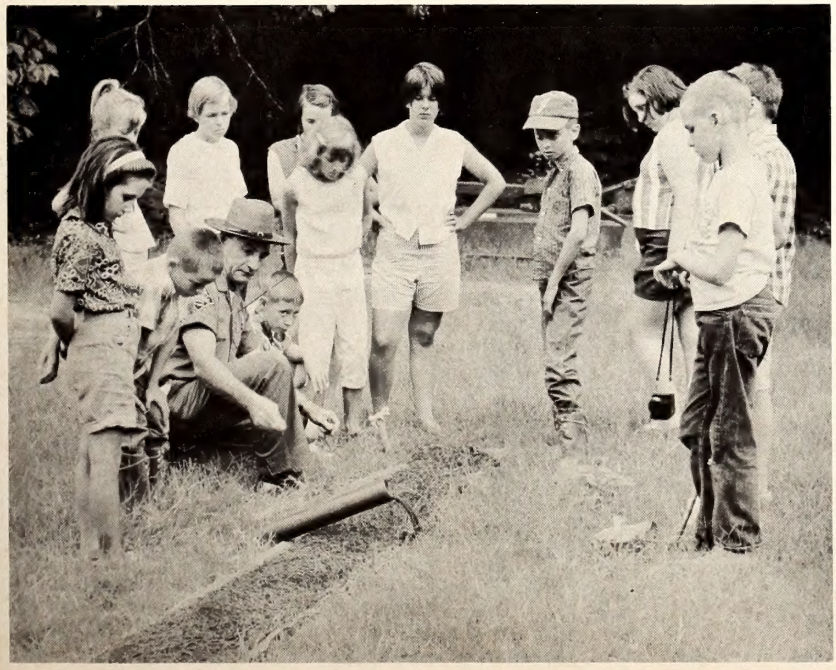
"Most of the time, the youngster can find the information for himself," he said. "If he tries to get the information and can't find it, then I work with him." But back of his teaching methods is a simple attitude that makes the whole program successful. It is Robbins' basic attitude which he sums up with these words: "You've got to get out and get your feet wet and your clothes dirty." Many youngsters have heard this over the years, and those who have been most successful in the club have done so by subscribing to this philosophy.

The club since 1960 has had a meeting hall to call its own, thanks to Oka Hester of the Greensboro Parks and Recreation Commission. Prior to that, the club had held meetings in the rear of Robbins' business, in backyards and anywhere they could find.

"Oka came by my place one day on business and it just happened that the children were preparing for a sidewalk exhibit at one of the shopping centers," Robbins recalled. "He saw our need for a meeting place and offered us this room in Cone Recreation Center." The Sertoma Club had already entered the picture with a donation of an old bus that the club could use for field trips. It came to the rescue again recently by aiding the club in purchasing a better bus.

ONE is surprised at the many exhibits he sees on his first visit to the club room. Mounted animals, mineral collections, insects, spider webs, photographs and many other aspects of outdoor exhibits are crammed into every nook and corner, some displayed in rebuilt candy showcases. And while these exhibits are many and some of those who finished a particular exhibit may not now be a member of the club, Robbins can describe every one and recall how the project got its start. "Just look at those chalk

Combining fun and learning is easy on a fishing trip to a beaver pond. Emphasis is on outdoor experience and character growth.



drawings," he said pointing to a series of duck drawings. "The boy who did those did them the first year he was in the club. He did that one of the deer by the water, too."

The children have fun on their field trips, to be sure. But the fun is secondary. Learning of the balance of nature and of the natural resources are all-important. For example, the club may one Saturday be in the mountain country near Hanging Rock, gathering rocks for a collection. They could be looking over a beaver lodge or a farm employing good soil and water conservation practices the next week. They sometimes visit wildlife management areas such as Caswell or Uwharrie. Personnel on the North Carolina Wildlife Resources Commission staff welcome them during their tour of their facilities every two years.

Clyde Patton, executive director for the commission, has come to expect to see the group attending public hearings on setting of the game regulations. It has become an annual event for the children to attend at least one public hearing each year. This is done to show them that an average citizen has a voice in the making of the regulations pertaining to game and fish.

Each member proudly wears a denim jacket with an insignia and the letters Junior Outdoors Club on the back. But he just wasn't given the jacket when he attended the first club meeting. The right to wear the club name is earned through a series of projects and presenting a program on a conservation or recreation subject. "I don't tell them what their subject is; I let them decide what project they want to undertake, and I encourage them," Robbins said. "When they complete the project and give a program to the other members on it, they have earned the right to wear the jacket. And then, too, they must be able to answer questions on their subject."

Mrs. Howard Robbins explains tree stump rings to Gwen Hunt (left) and Bonnie Hunt. A box turtle, held by Pat Connolly (above), gets lots of attention.

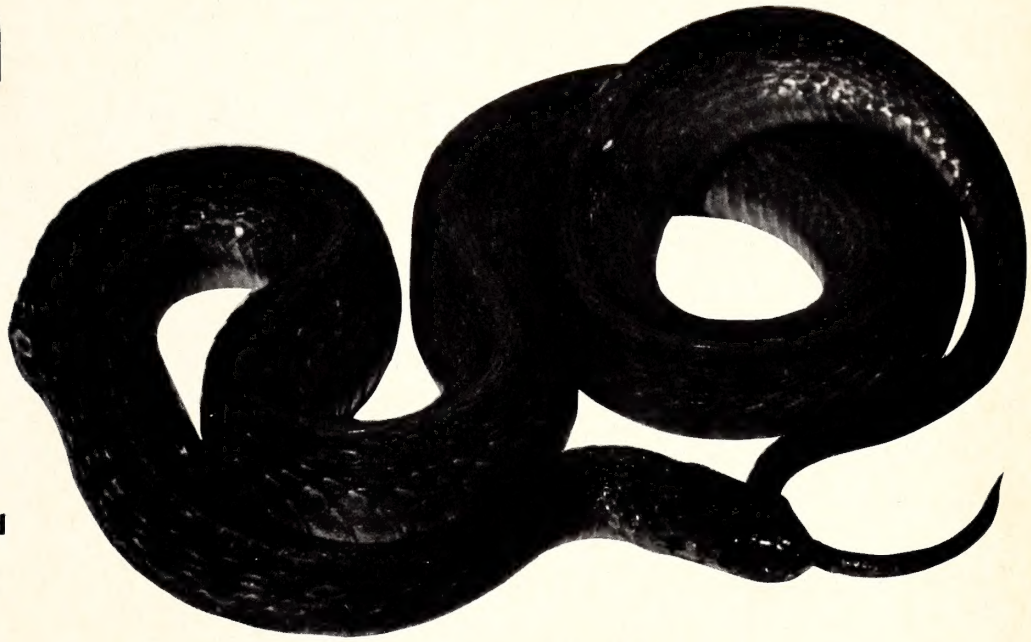
Displays usually result in some sort of personal expression. Former member Tony Pierman, shows his waterfowl drawings.

THE members of the club have and are participating in soil and water conservation projects, forestry, wildlife food and cover, trapping, tanning, bird and fish mounting, rocks and minerals, shells, bird houses, and feeders, dove banding, insect world, reptiles, photography, first aid, firearm safety, wild plant terrariums, wildlife habitats, squirrel nesting boxes, spider, spider web collecting, thinning out a section of forest, camping and many other outdoor activities.

The Junior Outdoors Club has made much progress since Robbins formed it some nine years ago. With his continued efforts of getting his feet wet and clothes dirty, many other children will benefit in the future. Wildlife clubs and public school educators would do well to visit the club to see for themselves what the youngsters are accomplishing.

Chances are, they would be surprised that this group has done so much with so little. And it is all because one man, Howard Robbins, believes that conservation education is worth time, effort and money from his pocket. ◆

The Brown Snake



by William M. Palmer and Franklin F. Snelson, Jr.

Photo by Joel Arrington

COMMONLY known as "ground" or "garden" snake, the brown snake, *Storeria dekayi,* is one of the most abundant species in North Carolina. However, its secretiveness, plain coloration, and small size (seldom exceeding fifteen inches) render this versatile species easily overlooked. Basically the color is brown, gray-brown, or sometimes reddish with two parallel rows of dark spots extending down the middle of the back. Occasional specimens are found with the spots joined with their opposite partners, forming a series of transverse lines down the back. A dark brown bar is present on each side of the head near the rear margin of the mouth.

The brown snake is represented by some five subspecies, and the range of the complex includes all of the United States east of a line connecting central Texas and eastern North Dakota, excluding only the northern portion of the State of Maine. The species occurs throughout North Carolina.

The brown snake is one of the few serpents that appears to benefit from a close association with man or his environs. Preferred habitats are trash dumps, abandoned lots, dismantled buildings, or other similar localities often so commonplace within or near cities. The species is, however, not limited to such areas, and in rural sections may be discovered in habitats ranging from swamps and meadows to wooded uplands. But whether the area be rural or urban, the brown snake appears to have its center of abundance near the dwellings of man.

Specimens are occasionally uncovered by persons engaged in yard or garden work, but the largest numbers are turned up by small boys who seem to possess a special talent for filling their pockets with the small wiggly creatures. This species is largely nocturnal, hiding by day beneath rocks, boards, scrap paper, or similar shelter, usually supplied inadvertently by man. Specimens appear abroad at night, prowling in search of earthworms, slugs, and soft-bodied insects and larvae. During the cooler months brown snakes often hibernate together in large numbers in abandoned rodent burrows or similar crevices in the ground. On warm winter days these snakes can often be found beneath cover exposed to sunlight.

This species breeds in the spring or early summer and the young are born alive in August or September. Baby brown snakes are about 3¾ inches long at birth and the number of young per litter may be as many as 24. In addition to being somewhat darker in color than the adults, the young possess a fairly distinct whitish or yellowish neck ring.

This small snake is inoffensive and rarely attempts to bite when captured. As captives most individuals do very well if fed earthworms and provided with a place to hide. Because of its small size and gentle nature, it is ideally suited for elementary classroom nature exhibits.

Unlike many of its ophidian cousins, the brown snake is presently in no real danger of extermination by the human populace. Instead it appears to thrive in areas where man's civilization and expanding commercialism have all but obliterated other reptilian forms. One writer has appropriately referred to the species as a "City Snake." ⬍⬍

THE DREAD "CALL HABIT"

BY LEA LAWRENCE

With a duck call it isn't so much what you say, as how you say it.

I am what might be termed a "call collector," and I feel it is my duty to do what I can to keep others from falling into a similar trap.

Actually, I didn't get this way on purpose; it just sort of slipped up on me. But then again, dry-fly purists and gun cranks didn't stray off the straight and narrow on purpose, either, so my excuse isn't really a good one.

I suppose it all began with a duck call (it usually does, I've learned since) and my intentions were no more complex than trying to close the distance somewhat between me and the mallards I kept spotting well out of shotgun range. And perhaps if I hadn't succeeded in duping some tone deaf waterfowl from time to time I would never have meddled with other instruments of this sort.

Next came a goose call, which was originally, and has remained to be one of the most baffling and frustrating of the lot. Never mind the embarrassing number of hours I have spent producing mournful wails with this baby—just let it suffice to say that if the geese are as completely at odds over the relative merits of goose calling as the individuals who fool with the calls are, then the situation will forever be stalemated. My hunch is that the geese really are that confused, and if you will make one educated guess as to why I feel that way, especially knowing that I do try to call them, you will probably emerge with an idea that there is room for bias.

Things brightened b r i e f l y when I took up crow calling, if for no other reason than there are lots of crows and that the amount of noise produced is usually as important as what kind of noise is produced. And until I had dispatched most of the unwary crows in my vicinity, I basked in the sunshine of apparent success. I even gave out with lengthy discourses on the subject of luring crows. Things darkened again when I began making assaults on legions of gun-shy crows and found them capable of giving me a sort of avian razzberry from afar—which was as close as I was able to get them.

I should have quit then, but I was thoroughly addicted. And even a series of subsequent failures was not sufficient to douse the

inner flame I had kindled. I had a monkey on my back, and I hadn't even called that!

My bout with a squirrel call was brief. Or I should say calls. I had one which was supposed to imitate the sound of a bushytail gnawing on a hickory nut. Another emitted squawks and squeals which, I imagine, was intended to cause them to come running to see what the devil was going on. Another's purpose never was entirely clear to me, because the sounds it produced rather bothered me, and I didn't want to risk trying it on a squirrel.

Then there was a hawk call which was death on bringing up hosts of farm boys but had utterly no effect on hawks. It would stop a pussycat in its tracks, too, so I figured that it at least sounded like something. From there I steadily went down. I found out about a quail call, and, naturally, had to have one. It, too, made a whistling sound, and while it did nothing in the way of bringing bobwhites to the bag, it later made an excellent teething device for my youngest son. He soon blew it full of mashed potatoes, thus retiring it permanently from use.

Predator calls were next in line, and I had a ball giving each of the brands a good try. With the aid of an instructional record I soon had the necessary finesse to call in bobcats, coyotes (there are none in this region, however), foxes, raccoons, etc., yet these creatures, to a species, failed to recognize a virtuoso when they heard one. Even one bandy-legged 'coon or an old, shaggy fox would have aided my ego a little, but nothing appeared except an occasional bewildered passer-by.

Failure didn't prevent me from getting involved in one of the most risky of all calls—the turkey call—either! I had courage, anyway, and I plunged into the field with zeal, however clumsily it may have been. In no time flat I had tried wing bones, cedar boxes, pipe stems, snuff boxes, cocoanut shells and myriad other varieties. I even had one which I carried in my mouth for months, whipping out yelps and clucks at every possible chance, seeing in my mind's eye huge gobblers aflame with desire strutting toward me from all directions. The actual results were as follows: (1) I came dangerously close to swallowing the contraption on several occasions; (2) I permanently traumatized a friend of mine's boxer dog, which was sleeping soundly until I gave an exhibition of turkey calling right over its head; (3) Close friends, casual acquaintances and even strangers began to regard me with jaundiced eye, and sometimes even a suspicious eye. I haven't given it up, though, even if I do practice in private nowadays.

Some squirrels simply have no sense of humor when it comes to "calls."

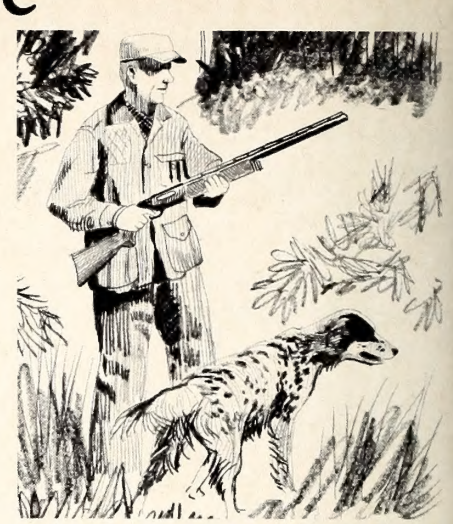
I met a qualified success on my dealings with a dove call. I call and the doves call back. They don't come to me, but at least they answer. And you can well imagine the joy in sitting in a hot millet field calling to doves that call back from far, far away. I just wonder what they are really saying?

And so here I remain, wallowing in the depths of the game call habit and wondering what the future holds. Only the other night I was looking through a magazine and stealthily clipped ads for a deer call, a chukkar call, a pheasant flusher (I *know* I can do that!) and a moose call.

It would be poetic justice, I suppose, if I ended up to be a regular Pied Piper of Moose. I've never even seen one! ◆

Hunting the Ruffed Grouse

by A. D. Harrell



THE old Essex shotgun, with its 32-inch full choke barrel, snapped to my shoulder and in a hail of number four shot and through a smoke screen sent up from the black powder load, my first grouse plunged from its flight path to the ground. Then and there on a cold November morning in 1928 was for me the beginning of a sport that I have followed with some luck and a little success for what is now 37 years.

The old Essex served me long and well through high school and four college years and now it occupies a place of honor among the things that I some day want to hand down to my two fine sons.

In those early years my knowledge of shot patterns, chokes and such was probably nil. But one thing I learned was that the grouse I shot at were either cleanly missed or they were so full of shot that when I cleaned the bird I had quite a time picking the shot and feathers out of the fine white meat.

In 1945 the Old Essex was replaced by Winchester's Model 97 pump action, twelve gauge with an improved cylinder barrel. This gun was responsible for much work being postponed for a later day. With it my grouse shooting improved considerably, there were fewer clean misses, more birds in the bag, and less shot and feathers to be picked out of the dressed bird. It was during the years I used this gun that I almost unconsciously formulated a philosophy relative to my grouse hunting—such rules as: my family is too fine to ever be denied a grouse dinner at Thanksgiving, Christmas and New Year's. (It takes four grouse to make a dinner here.) So I hunted with a high purpose.

I soon found out that one rule wasn't enough because I was caught in the unbearable position of having the necessary grouse in the freezer with hunting days going to waste. Clearly, the situation called for more philosophy. So, being the innocent schemer that I am, I philosophized that every person that got sick in my community should certainly have a meal of grouse and creamed grouse gravy. (There is nothing like a noble purpose to soothe one's conscience while out grouse hunting when in reality one should be at home working.)

THE above-described plan of operation had one serious weakness in that it still lacked a safety margin or insurance clause. I met that situation by making a list of much loved personal friends that deserved of all things a grouse for breakfast on Christmas morning.

Now any good hunter should certainly have a definite hunting schedule. If there is anything I dislike it is having to spend some of my time trying to figure out what day to go hunting. So I set up a schedule to hunt every Tuesday, Thursday, and Saturday. In case any of my friends, hunting partners, or acquaintances cannot fit into that schedule we have Monday, Wednesday and Friday to fall back on. We never break the original schedule, just add another day.

One episode that happened during those pump-gun years shouldn't be put into print, but maybe the statute of limitations will apply.

I was teaching in the local high school at the time and was having my usual trouble making up a plausible story that would get me out of school early so I could be after those grouse. On this particular day the county superintendent of schools was conferring with my principal in the principal's office. That afternoon it came time for action and those two gentlemen were still conferring. So I knocked on the office door, gained admission, apologized for interrupting their conversation and told the principal that I had a problem at home of a personal nature and requested that he please let me leave early. Permission was granted so home I went.

In a hurry I changed clothes, got my gun, and bird dog and headed for the hunting area. I had parked my car and walked some 500 yards up a log road that went through the rhododendron thickets. My dog had pointed two grouse. I had taken two shots and killed one bird. Rounding the next bend in that log road I came face to face with, of all the people on this earth, that county superintendent of schools. I tried real hard to think of something appropriate to say, but came out with "What in the H--- are you doing here?" The gentlemen answered, "I am looking for Mr. Griffith, one of our school board members to tell him we are having a board meeting tonight. His wife told me he is cutting some logs in this area." I pointed out the area Mr. Griffith was in and offered the gentlemen my grouse. That superintendent thanked me, refused my grouse, and fired me. I can still see the deep lines of worry on his face—it was as if he was bothered about something. He just didn't seem to understand the situation. At the end of that school term, after 20 years in the classroom, I was set free to be with my family, our dairy farm and my grouse hunting.

By 1963 my Model 97 Winchester pump had been shot so many times that it was in a

shaky, dangerous condition. At my good wife's urging I replaced it with Winchester's Model 59 WINLITE with fiberglass barrel. That gun is, because of its lightweight, fast action and easily changed choke tubes the answer to a grouse hunter's dream. Now when I find my pointer with front foot up, head high and tail perfectly still, I'm ready. When that grouse comes roaring out he had better get gone fast if he doesn't want to become part of someone's dinner.

During the 30-plus years of grouse hunting I have made a few observations that may be worth passing along.

Regardless of when the season opens don't try to shoot grouse until the leaves come off the trees. I cite such efforts as a study in frustration.

Hunt with a bird dog. Not just any bird dog, but a good one. The dog must stop and point immediately on coming in contact with the slightest grouse odor and this point must be held until instructions are given to move up. Of course this will mean pointing in areas where grouse walked about, fed and moved out, but it will also mean many shots at birds that have elected to temporarily sit tight because that dog stopped 20 to 30 yards back. No mere quail dog will do here. Grouse have an intense dislike of a bird dog breathing on their tail feathers. A small bell, on the dog collar will keep you advised of the dog's location, but it isn't recommended on a trained dog because it interferes with audible instructions. My grouse dog must hunt dead and retrieve.

More grouse shots may be had by hunting the area with thick evergreen cover. Here grouse seem to feel safe enough to remain still while the hunter and his dog approach. The shots will probably be snap shots and the hunter will have very little time to line up on the bird. But the difficulty of the shots make the sport all the more interesting.

It appears that most authorities recommend shot size of 7½ or 8. I don't go along with that recommendation but prefer a heavier shot such as number 5 or 6. My belief is that these larger shot penetrate the brush better and do a better job of bringing down the grouse. If grouse would fly in the open areas as dove do, then 7½ shot would be fine but grouse love to fly where there is just barely enough opening for them to get through.

Some years ago I shot a grouse crossing a ravine, flying directly away from me. The bird didn't fall straight down but pitched slightly to the right on a downward course indicating a hit in the right wing. After a lively chase, my dog retrieved the bird and brought it to me still alive. When I dressed the bird it had the tip of the right wing broken and to my surprise had five of my number 5 shot well embedded in the back of the chest area. Another time, I shot at a grouse high overhead as it flew from one ridge to another. I saw no evidence of a hit and really didn't expect to because of the maximum range. When we followed him up, hoping for another shot, my dog found it dead. Examination showed one number 5 shot had entered the bottom of the stomach gone clear through and out the back.

On another occasion, a bird flew by me so as to present its left side as a target. When I fired it was clear my number 5 shot had scored a hit but the bird continued on for some 30 yards before coming down in a rough, rocky area. My hunting partner shot the bird again on the right side with number 7½ to prevent it from crawling into a hole in the rocks. Examination showed seven number 5 shot in the left side in addition to the 7½'s in the right side. These examples are given to show that a grouse can carry a considerable amount of shot and keep going. When 7½ or 8 shot are used, it is believed that many birds are lost because the light shot do not have enough shocking power to bring them down.

HERE are some observations that will help in locating a grouse once it gets up and sails away unharmed. If if flies up the hill you can be pretty sure it came down 10 to 20 yards beyond the crest of the hill, then walked a few yards to cover that offered the most protection and will stay there until disturbed. If it flies around the slope of the hill expect it to go from 175 to 200 yards. When such a flight occurs don't expect to find the bird on the course of the flight path but look for it about 75 yards above the course of its flight. It seems that when the bird decides to glide in for a landing it flies toward the ground on the upper side and in addition to the glide will fly several yards just above the ground before stopping.

If a grouse flies down the hill wave it good by and forget it. It may will go into the next county before it stops.

For the grouse hunter I recommend a forgiving, tolerant and loving wife. When you have walked the small streams, laurel slicks, log roads and ridges of the mountains of western North Carolina from 8:30 in the morning until 3:30 in the afternoon you may be a tired hunter. Follow me into our living room, have a seat and see my dear wife come in with a big tray of hot homemade cinnamon buns, followed by a lovely young daughter with another tray filled with cups of steaming hot coffee and hear, "I knew you fellows would be tired and hungry so we fixed you some refreshments." On such love and care a grouse hunter will flourish—undeservedly. ◆

Wildlife Conservation Camp-1965

by Bobby Hilton

THE twenty-seventh annual 4-H Wildlife Conservation Conference was held during the week of August 9-14, at 4-H Camp Millstone, Ellerbe, North Carolina. In attendance were over 75 4-H club members and leaders from all over the State of North Carolina.

The entire week was devoted to gaining knowledge on conservation of wildlife and other natural resources. During this week of camp, we 4-H'ers attended classes on conservation engineering, nature study, fishery management, and we also completed a four-hour course on hunter safety. Other activities included swimming, canoeing, recreation and competitive sports, plus informative assemblies. All of the classes were conducted on an informal basis, often stopping for discussion when necessary.

One class which was greatly enjoyed by all concerned, was the nature study period.

This class was conducted by Mr. Conley Moffett, who is Chief Park Naturalist for the Division of State Parks in North Carolina. During this session, Mr. Moffett took the groups on a nature hike around the many acres of camp. On this trip, he pointed out the different stages as well as types of poisonous and nonpoisonous mushrooms, odd species of ferns, and curious rock formations. The hike took about an hour, and at its end everyone agreed that this had been an hour well spent.

Another very interesting and informative lecture, was given by Miss Lunette Barber, an Educational Representative from the Wildlife Resources Commission. Miss Barber's talk was based on her trip to Alaska, which she had taken several months after the Alaskan earthquake. During her talk, Miss Barber showed the group slides of her trip, and pointed out places of interest on a map. She also informed us on the ways that the Eskimos live, their religion, and their customs.

As Miss Barber finished her program, the familiar tone of the lunch bell sounded, and as everyone was about to depart, she left us with this thought: "If any of you ever get the chance to go to Alaska, *go*. It will be an experience of a lifetime." A little personal opinion of mine is, that if anyone would have said, "Let's go to Alaska," I dare say that the better part of the group would have been ready to have left then. Yes . . . even without lunch!!!

In the conservation engineering class which was presented by Mr. Howard Ellis, an agricultural specialist, we 4-H Club members learned how to run contours, lay out drainage ditches, and also had several film strips on the geological makeup of our earth. We also held a discussion on the periods of time, and the positions of the oceans during these. Mr. Ellis' class proved helpful to all of us, because of the information that we could use when we returned home.

As you are reading this article, don't get the impression that our week at camp was all work, or on the other hand, all play.

For our recreation, we had supervised ballgames, horseshoe pitching, pingpong, and also swimming and canoeing. The camp was very well equipped with eight canoes and a rowboat. Canoeing instruction was provided, and before the week had ended, almost half of the campers had passed the rigid canoeing test, that was required by the camp regulations.

The fishing on that beautiful 18-acre lake was very rewarding. The lake is blessed with a wide variety of game fish, and even a larger number of fishing 4-H Club members.

The night assemblies after supper provided a large amount of good natured fun, comedy, and entertainment. During the week we had a talent night, a skit night, movies, and on Friday night after the banquet, we had dancing, ranging from the most modern, to several fast old-fashioned square dances. Later in the evening after the final jokes had been told, and the last song sung, we had vespers. Our day ended with all of the people present, forming the traditional 4-H friendship circle and singing taps together.

The most important part of our day, came with the morning flag ceremony before breakfast. All of we 4-H'ers, along with our leaders would line up in a half circle around the flagpole and pledge allegiances to the American and 4-H flags. This one action above all others, made us 4-H Club members realize that we live in a democracy, and that we have a great heritage. It is by organizations like 4-H, that we continue to live in a free world. The 4-H ideals strive to "Make the best better," but we can only continue as long as we have the interest and support of our parents, friends, and leaders.

This wonderful week of wildlife conference was sponsored by the Federal Cartridge Corporation, County Clubs, and individuals. Therefore, speaking on behalf of the 4-H Club members who attended, I wish to extend a most hardy thank you to all of you who make this annual camp possible. ◆

NORTH CAROLINA WILDLIFE

RESOURCE-O-GRAM

A ROUNDUP OF THE LATEST WILDLIFE NEWS

Dove Season Reopens December 11

The second segment of a split dove season gets under way at noon on December 11 and will run through January 13; same shooting hours, noon to sunset, and same bag limit 12 birds daily, 24 in possession. Doves will be harder to find in the late season, especially in Western North Carolina.

Controlled Shooting Preserves Listed

The Wildlife Resources Commission has licensed 20 commercial shooting preserves in 15 Tarheel counties. All of these are open for business and all are licensed to allow pheasant, quail and chukar partridge shooting until March 31. Most preserves offer quail only, some pheasant only, others combinations of these species or combine quail and chukar shooting. Lists of the preserves giving name, location, etc., are available from the Commission, Box 2919, Raleigh 27602.

Squirrel, Bluebird, Wood Duck Housing Plans Available

Although spring is several snowstorms away, the Wildlife Commission urges persons interested in constructing housing developments for squirrels, bluebirds and wood ducks to write in for free plans for construction. Over the years public cooperation in this activity has brought about a noticeable increase in squirrels and wood ducks, and has resulted in a strong comeback in bluebirds, once believed to be in danger of extinction. A Commission spokesman pointed out that these houses make excellent Christmas gifts for the species concerned as well as for nature-loving friends. Bird feeder plans, too, are available. Write "Wildlife Houses" Box 2919, Raleigh 27602.

Wildlife Planting Materials Plentiful

The Wildlife Commission's Division of Game has on hand an abundant supply of shrub lespedeza seedlings, serecia lespedeza seeds and annual seed mixtures ready for free distribution. Shrub lespedeza may be planted anytime, and the seeds during the normal spring planting season.

Squirr

Photo Feature

THE gray squirrel is a common
primarily an inhabitant of woodlands
Acorns, hickory nuts and beech nuts, a
foods. Also, as every farmer knows,
corn, peanuts, and pecans.

The gray squirrel is very agile and
Most of its life is spent in trees, but
den is nearly always in a tree. Cavities
provide protection from severe weath
and man. Sometimes leaf nests are also

The gray squirrel ranks high on th
young hunter or an experienced veter
to be a match for your patience, vis
trip watch for signs of squirrel activity
mud or snow, leaf nests or hollow t
holes,—then have a seat on the ground
to be still longer than the squirrel.

A full grown gray squirrel sits for his portrait in the sunlit woods. The salt and pepper color of the coat usually blends with the forest surroundings affording good protection. A set of tracks in fresh snow indicate cold weather activity.

Woods

Eugene Hester

in all parts of North Carolina. It is ins food and shelter from the forest. seeds of pines and maples are favorite squirrel has a special fondness for

through treetops with amazing speed. t home on the forest floor. Its nest or e trees serve as nesting sites and also om enemies such as hawks, raccoons ted.

Tar Heel hunters. Whether you are a ll probably find this bush-tailed critter ing and shooting skill. On your next f nuts they have eaten, tracks in sand, a worn appearance around entrance back against a big tree. The secret is

Sure signs of squirrel activity: empty corn cobs and hickory nut shells with tooth marks.

Spotting the squirel may be a real problem. This one hugs the trunk of a large nut tree. But patience and persistence do pay off, and the harvest of the squirrel crop provides good sport.

Waterfowl Hunting on Salt Marsh Impoundments

by Otto Florschutz, Jr.

BY the time the 1965-66 waterfowl hunting season arrives, it is hoped that another 100 acres of waterfowl marsh will be developed for free public hunting. This area will bring the total up to 1,285 acres, which have been developed and opened to the public in the past four years. These Wildlife Resources Commission-sponsored areas will provide wildfowlers free use of impoundments, built and managed especially for the management of ducks, geese, and coots. Free fishing, trapping, crabbing, and frogging also are offered during other parts of the year.

The 800-acre Pamlico Point impoundment was completed in 1964. It consists of four 200-acre sub-impoundments and was built in cooperation with the Pamlico County Health Department. The first pond was flooded in early May, the second in late May, the third in October and the fourth in November, 1964. Despite a general lack of food, many coots and ducks and a few geese used the area during the first winter. Waterfowl usage reached a high of 1.14 birds per acre. Since the completion of construction and flooding in 1964, nearly 1,000 plots of duck foods have been transplanted throughout the four sub-impoundments by project assistants Ralph Keel and Will Hamilton. During the summer of 1965, these have spread rapidly, and in addition to several species of good native duck food, will furnish much food for waterfowl.

Breeding duck usage has increased also and approximately 20 broods of black ducks totaling at least 100 young were produced on the 800 acres during the past summer and spring. Waterfowl hunting during the first winter was fair as hunters bagged coots, black ducks, mallards, pintails, widgeons, shovellers, green- and blue-winged teals, scaups, ring-necked ducks, buffleheads, ruddy ducks, mergansers, and a few geese.

The oldest of the Commission's salt marsh impoundments is on the Gull Rock Management Area in Hyde County. Built as an experimental project in 1961, the 350-acre area has been open to public hunting since its completion. Black ducks, mallards, pintails, widgeons, green- and blue-winged teals, wood ducks, coots, and an occasional Canada goose have been harvested there. For 27 months, the area retained good water levels and duck foods flourished, and duck and hunter usage were good. Dike damage by burrowing muskrats, coupled with drought in 1963, resulted in decreased waterfowl use and hunter kill. Current plans are to begin necessary repairs by November, 1965. This area should once again become a good waterfowl harvest area following the reconstruction planned for this winter.

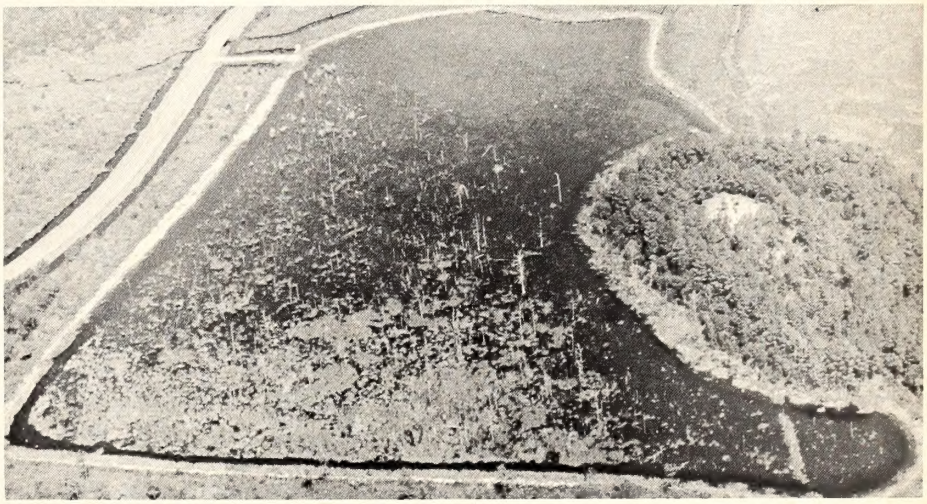
In 1962, a 35-acre pilot project near Hobucken, North Carolina, was built cooperatively by the Pamlico County Health Department and the Wildlife Resources Commission. Top quality waterfowl foods were transplanted from Currituck Sound and by 1964 these foods had spread over 90 percent of the impoundment. The waterfowl population exceeded 300 last winter and hunter usage and success was good despite the small size of the area. At least ten broods of wood ducks and black ducks have been produced there since completion. Fishing has been excellent at times. Catches have included pumpkinseed, bass, and catfish. This area served as a pilot study for the larger Pamlico Point area.

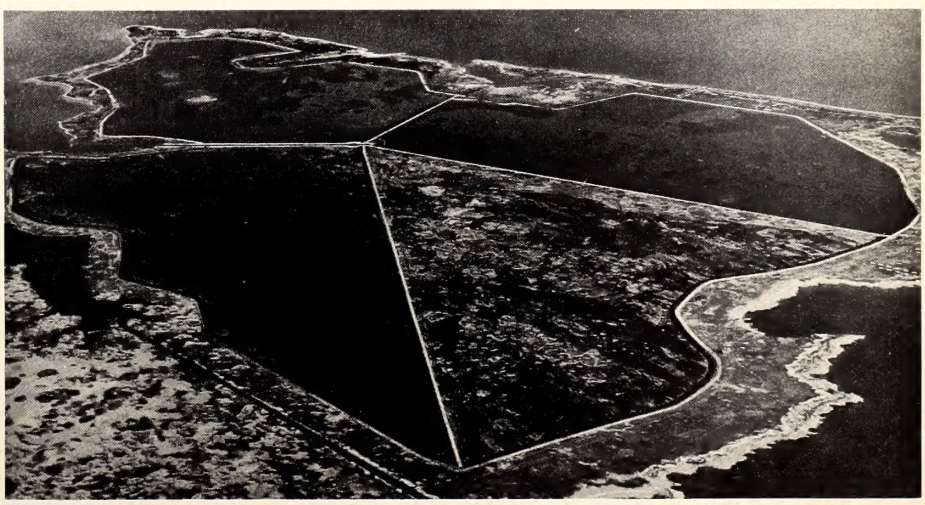
The newest salt marsh impoundment was due for completion by October, 1965. Construction is by the Onslow County Health Department under the direction of Mr. Guy Banks and is being engineered by Mr. Keith Oats of the North Carolina State Board of Health. The project, a joint mosquito control-waterfowl impoundment, is located along the White Oak River just below Stella, North Carolina. It is being constructed in order to provide long term control of salt marsh mosquitoes by the permanent flooding of the mosquito's egg-laying sites. At the same time it will provide a place for the control of undesirable marsh vegetation, the introduction of desirable waterfowl food plants and subsequent use of the waterfowl hunting public. Year around duck usage will occur as food plants spread. Black ducks, wood ducks, and gadwalls eventually will produce their young on the area, which will provide additional ducks for the flyway. Commission-owned and operated pumps, motors and tide gates will insure a permanent supply of water in the impoundment which will result in mosquito control, an expanding food supply and increased duck usage.

As the Commission's waterfowl program continues to expand and as new funds and wetlands become available, new impoundments will be constructed in eastern North Carolina. Further research regarding water levels, food plants, water salinities, dike stability, equipment needs and multiple-use are being carried out. Technical assistance has been given to private marsh owners who have entered into cooperative agreements with county and state health departments in which salt marsh impoundments have been built for mosquito control purposes, with equipment for retaining suitable water levels being provided by the landowners. It is hoped that eventually enough private and public areas will be built to offset the loss of wetlands caused by expanded mosquito ditching, swamp drainage and reservoir construction programs and by pollution.

On the 1,285 acres of Commission-managed impoundments, the public is invited to participate in the sports of waterfowl hunting, fishing and trapping. Appropriate licenses are required, but no additional special permits are necessary. It is of course expected that users will not tamper with locks, buildings, signs or equipment on the various areas and that consideration will be given fellow sportsmen regarding shooting hours, bag limits, and other laws and regulations. These areas are being furnished for the hunter by the Wildlife Resources Commission for recreational use. Blinds may be built on any of the areas but these become public property upon completion. For further information regarding the location of these salt marsh impoundments, contact the North Carolina Wildlife Resources Commission, Box 2919, Raleigh, North Carolina 27602.

Early experimental marsh impoundments like this Goose Creek track number 2, lead the way to larger projects.





This is Pamlico Point, an area which dwarfs the 35-acre impoundment shown above. Better waterfowl hunting is the ultimate aim.

Creel Census-2

What tackle do they use?

by Frederic F. Fish

This is the second in a series of articles on the results of the Statewide Creel Census. How and where do you fit in?

THE type of fishing gear used by anglers is a rather important consideration when regulating the harvest from the inland waters. Unless one is aware of the numbers of the fishing public that will be affected by a proposed regulation, he is not in an ideal position to judge just how much good that regulation might actually accomplish. Until now, very little has been known about the "fishing public" beyond the type of fishing license that some of them saw fit to purchase. It is a moot question whether the type of fishing license purchased by an angler in any way reflects the type of fishing gear he will use—although somehow the fisherman unlicensed by reason of the "County Resident-Natural Bait" exemption *does* seem to fit rather well into the image of a cane pole, a can of worms, and the nearest creek.

In an entirely different direction perhaps, it might be reasoned that the angler who has sufficient time to master the intracacies of fly casting probably also has time to do some hunting. The odds should favor a bet that the fly fisherman tends to purchase a Combination Hunting-Fishing license. Just where other bits, such as casting rods, the two-line fisherman, and the fishing gear preferences of minors for example, might fit into the North Carolina angling picture seems far less susceptible to deductive prediction.

The Statewide Creel Census tallied the type of fishing gear being used by 28,454 anglers at the time of contact—and of these, 15,885 held a fishing license of one type or another. The resulting data tell quite a bit about the gear preferences of the various categories of license-holding—as well as the license-exempt—fishermen. By projecting various proportions drawn between the Statewide Creel Census data and known points of reference such as the 1964 Statewide license sales, it was possible to make reasonably sound estimates concerning the number of anglers using specific types of fishing gear in the inland waters of the State.

To begin with, the "typical angler" of North Carolina's inland waters very definitely would be a natural-bait fisherman, for some 80 percent of all anglers seem addicted to natural baits and another 8 percent use them in conjunction with artificials when the occasion demands. Also, the chances are about 3 to 1 that the "typical angler" will be using natural baits quite irrespective of the type of rod he may have. The chances are about even that he will have a cane pole over his shoulder although, statewide, the casting rod is not too far behind the cane pole in popularity.

More specifically, the estimated numbers of anglers of North Carolina's inland waters using cane poles, fly rods, casting rods, two lines concurrently, and three or more lines concurrently, with natural baits, artificial lures, or both on the same fishing trip look like this:

	The Estimated Statewide Total Number of All Anglers:					
Using a → With	Cane Pole	Fly Rod	Casting Rod	2 Lines	3 Lines	Totals
Natural Baits	355,556	29,289	185,417	36,085	267	606,614
Artificial Lures	1,529	16,230	73,243	2,124	0	93,126
Both	2,568	6,678	33,667	17,853	617	61,473
TOTALS	359,653	52,287	292,327	56,062	884	761,213

Having thus outlined the "body politic", we may now proceed to dissect it as far as interest and curiosity may dictate.

There are, as might be expected, rather wide differences in the gear preferences of the unlicensed and the licensed fishermen, as the two summaries at right definitely show:

The more prevalent use of artificial lures among the licensed fishermen, even those using cane poles, is very apparent from these data.

The unlicensed anglers data are actually composed of two quite different components: the county residents using natural baits who are principally adults, and the minors who have not yet reached their 16th birthday and who would be an entirely different age group from all others. For valid comparisons, these two groups of unlicensed anglers have been separated in the two summaries above, right:

By the same token, the licensed anglers apparently also are composed of diverse groups, a fact that was obscured by the grouping of all data in the foregoing summary of all licensed anglers. The One-Day Resident and the Nonresident licensees tend more strongly to cane-pole fishermen than any other group of licensed fishermen. Likewise, the numerically greatest group of fishermen using 3 or more lines concurrently is not the unlicensed county residents as is frequently insinuated but it is those holding Statewide Fishing Licenses with the Combination Hunting-Fishing licensees running them a very close second. This is shown in the remaining tables at right:

Apparently those two early images were not so far off at that. The unlicensed angler by reason of being a county resident using natural bait is, by far, the greatest devotee of the cane pole —and the largest number of fly rod users is found among the Combination Hunting-Fishing license holders.

And that about sums it up for the number of anglers and the gear they use in the inland waters of North Carolina. ◆

The Estimated Statewide Total Number of All Unlicensed Anglers:

Using a → With	Cane Pole	Fly Rod	Casting Rod	2 Lines	3 Lines	Totals
Natural Baits	229,526	14,621	89,184	16,762	29	350,122
Artificial Lures	27	385	4,097	55	0	4,564
Both	82	137	1,045	385	0	1,649
TOTALS	229,635	15,143	94,326	17,202	29	356,335

The Estimated Statewide Total Number of All Licensed Anglers:

Using a → With	Cane Pole	Fly Rod	Casting Rod	2 Lines	3 Lines	Totals
Natural Baits	126,030	14,668	96,233	19,323	238	256,492
Artificial Lures	1,502	15,845	69,146	2,069	0	88,562
Both	2,486	6,631	32,622	17,468	617	59,824
TOTALS	130,018	37,144	198,001	38,860	855	404,878

The Estimated Statewide Total Number of Unlicensed Minors:

Using a → With	Cane Pole	Fly Rod	Casting Rod	2 Lines	3 Lines	Totals
Natural Baits	30,795	2,970	18,147	385	0	52,297
Artificial Lures	27	385	4,097	55	0	4,564
Both	82	137	1,045	385	0	1,649
TOTALS	30,904	3,492	23,289	825	0	58,510

The Estimated Statewide Total of Unlicensed County Resident-Natural Bait Anglers:

Using a → With	Cane Pole	Fly Rod	Casting Rod	2 Lines	3 Lines	Totals
Natural Baits	198,731	11,651	71,037	16,377	29	297,825

The Estimated Total Number of Statewide Fishing License Holders:

Using a → With	Cane Pole	Fly Rod	Casting Rod	2 Lines	3 Lines	Totals
Natural Baits	22,478	3,259	23,292	5,319	128	54,476
Artificial Lures	451	2,976	12,776	271	0	16,474
Both	438	1,301	6,107	3,568	256	11,670
TOTALS	23,367	7,536	42,175	9,158	384	82,620

The Estimated Statewide Total Number of Combination Hunting-Fishing License Holders:

Using a → With	Cane Pole	Fly Rod	Casting Rod	2 Lines	3 Lines	Totals
Natural Baits	34,410	6,432	35,959	7,136	110	84,047
Artificial Lures	661	7,894	34,051	705	0	43,311
Both	826	3,643	14,011	8,281	199	26,960
TOTALS	35,897	17,969	84,021	16,122	309	154,318

The Estimated Statewide Total Number of County Resident Fishing License Holders:

Using a → With	Cane Pole	Fly Rod	Casting Rod	2 Lines	3 Lines	Totals
Natural Baits	6,073	1,359	9,278	725	0	17,435
Artificial Lures	242	1,058	5,651	30	0	6,981
Both	212	484	3,143	816	0	4,655
TOTALS	6,527	2,901	18,072	1,571	0	29,071

The Estimated Statewide Total Number of Resident One-Day Fishing License Holders:

Using a → With	Cane Pole	Fly Rod	Casting Rod	2 Lines	3 Lines	Totals
Natural Baits	50,971	2,234	20,731	5,630	0	79,566
Artificial Lures	45	1,251	7,953	89	0	9,338
Both	805	536	5,362	3,932	9	10,644
TOTALS	51,821	4,021	34,046	9,651	9	99,548

The Estimated Statewide Total Number of All Nonresident License Holders:

Using a → With	Cane Pole	Fly Rod	Casting Rod	2 Lines	3 Lines	Totals
Natural Baits	12,098	1,384	6,973	513	0	20,968
Artificial Lures	103	2,666	8,715	974	0	12,458
Both	205	667	3,999	871	153	5,895
TOTALS	12,406	4,717	19,687	2,358	153	39,321

The deer are here but the hunting isn't the easiest in the world. It takes a bit of work and a steady shooting eye to rack up a kill like this. Ready to try your luck on Holly Shelter deer?

Holly Shelter Deer Hunting

by Grady L. Barnes
Photos by Jack Dermid

LOCATED in the vast pocosin land in Pender County is a 48,500 acre tract of land known as the Holly Shelter Wildlife Management Area. This tract is managed by the Wildlife Resources Commission for the purpose of providing premium deer hunting for the sportsmen of North Carolina. How well is this purpose accomplished? Last hunting season a total of 929 gun hunters killed 65 deer and one bear for a success rate of 14 hunter-days per kill. Although this success ratio is not miraculous, it is much better than the average eastern deer hunter enjoys. Probably a higher deer per acre population exists on Holly Shelter than any other part of the State, but due to the denseness of the pocosin and the resultant difficulty of hunting, the deer are underharvested.

Pocosin land is characteristically wet, boggy and covered with dense stands of bay shrubs, vines and stunted pond pines thus making walking almost impossible. Pocosins are so remote that even the word "pocosin" is not listed in standard dictionaries but is found only in the unabridged forms. It comes from the Algonquin Indian language and means "dismal"; to the Indians it meant evil days or a place of evil. But regardless of the meaning of the word or the formidable vegetation growing in the wet pocosins, deer are plentiful, and where there are deer in abundance the hunters soon follow. Bears are also found in this large pocosin and offer an extra bonus to the skilled hunter.

How to Hunt

Three kinds of deer hunting are allowed on the Holly Shelter area: archery hunts, dog deer hunts and firearm still hunts. Archery hunts are successful only in that plenty of deer are seen and many are shot at. But very few kills are recorded, in fact only one in the last six years. One reason is that the dense growth prevents tracking of wounded deer. Another is that by state law only antlered deer are legal in Pender County. This reduces the potential kill and the popularity of the area for archery hunters since either sex kills are allowed on other management areas.

Firearm still hunting for deer is growing in popularity in the traditionally dog deer hunting east, and on Holly Shelter an increase from 136 hunters to 599 hunters in the past five years reflects this trend. This increasing popularity of still hunts has been accompanied by increasing success rates—from a total of five deer taken the first year to a high of 45 taken last year. Due to the density of eastern swamp vegetation, dogs are generally used to drive the deer to roads or trail crossings where the hunters are located; but in areas where access is obtainable, good success can be demonstrated by waiting for deer to come to feeding areas or by intercepting them on deer traveling lanes similar to the still hunting methods used in the

western section of the state.

The old traditional method of running deer with dogs is also permitted on the Holly Shelter area and is very popular with hound men. Many are the hunters who would rather listen to a pack of red-bone hounds or nondescript "sooners" push a trophy buck through the brush than to be in on the kill. Of course the kill is an extra bonus that is highly sought after, but without the music of the hounds, it would not have the richness or joy to the dog deer hunter. In the past, dog deer hunts were allowed only through party leader assignments and advance applications. One man was designated as the party leader and was allowed four dog handlers, and 30 additional hunters made up the party. In an effort to more fully utilize the area and the deer population, these party hunts have been discontinued and starting during the 1965 hunting season (on designated days) anyone or any group can bring their own dogs and party without advance registration and will be assigned a compartment to hunt. This method of hunting eliminates the necessity of applying weeks in advance for reservations, and allows each individual to run his own dogs.

How To Get At Them

The largest problem facing pocosin deer hunts is access—how to either get into where the deer are located, or how to bring the deer out of the bays where you might have a chance of seeing one. To solve this problem on Holly Shelter, lanes have been cleared and fields have been seeded. Hunting lanes 10 to 20 feet in width are cut through the pocosin area with crawler tractors pulling a rotary cutter or tiller. These lanes provide a route for hunters to travel deep into the bay and they are also utilized by deer as travel lanes. A very popular place is where two lanes intersect; here a hunter can observe in four directions and can increase his chance of success. Probably the best success on the area is obtained by hunters who use these lanes.

In an effort to bring the deer out of the pocosins and thus to increase hunter success, 35 fields encompassing 132 acres have been cleared and seeded to either ladino clover or winter rye. These fields are very heavily utilized by deer. The problem encountered in hunting fields is that movement by the hunters keeps the deer from utilizing the fields during the daylight hours. To be successful in field hunting the hunter must arrive early and locate a good stand where he can observe the field and yet not be observed by the deer, and above all remain motionless on his stand until his hunt is completed.

Keep Still

In the east, an important factor which detracts from success on still hunts is movement of hunters. On the western hunts, movement by hunters will cause deer to move about and because of the relatively open forests they are more vulnerable to the hunter; but on the eastern areas, movement will cause the deer to move into the deep pocosin where the hunters cannot go, and where the deer will stay until darkness permits undisturbed travel. In order to increase the chances of success on Holly Shelter still hunts, tree stands have been constructed near each field where a good view of the field can be obtained. Deer are not accustomed to danger from above them and are not as suspicious of movement by a hunter located in a tree stand.

Several miles of roads have been constructed on the area for hunter access and a program of drainage and road construction is under way that will allow access into land that is not being utilized by hunters. One road well known by local airplane pilots is the Military Road which was constructed in a zig-zag pattern as an experiment in reducing chances of accidental shooting by hunters who shoot at deer as they cross the roads during the dog hunts. Hunters are stationed at alternate points in the zig-zag pattern and thus can shoot down the road without danger of hitting another hunter. This is an ideal arrangement for the dog hunter but it is disconcerting to anyone flying over the area to see such a road.

This is "the" road as seen from the air. It makes shooting safer. The checking station is shown in the photo below.

Bay or pocosin deer have a very distinctive appearance in the fall and winter brought about by the vegetation. Due to their movement through the thick vegetation the tips of the guard hairs are rubbed off and this exposes the whiter inner part of the guard hairs. This gives the deer a white spotted appearance and continued abrasion wears the hairs off the sides and flanks until the skin is exposed. Because of this change in the guard hair length and color many of the deer look brown and white spotted in the fall, and by late winter they are brown and white spotted with patches of gray skin exposed.

As a result of the protection and management program carried on by the Commission's refuge managers assigned to the area, Holly Shelter now contains an abundant deer population. What is now needed is more hunters to kill more deer to keep the herd in balance with the carrying capacity of the area. If you are looking for a place to hunt this winter, why not give the Holly Shelter area a try? ◆

United States Power Squadrons Survey-

The Sign Post of the Sea

by John R. Parker, Jr.

Photos by the Author

THE work of the United States Power Squadron in the field of boating safety education is widely known in boating circles. The courses they offer are widely accepted and are recognized as being professionaly carried out and highly informative.

In 1964 the organization celebrated its 50th Anniversary and as a result of the efforts put forth by Squadron members during this span of time, upwards of one and one-half million boaters have been trained and have become wiser in the ways of the sea.

Today, this national organization of approximately 350 squadrons and 60,000 members continues to make available to the public instruction in safe boat handling. One of the basic aims of the organization is to make their courses available to even more people than it has in the past.

There are eight squadrons of the United States Power Squadrons in North Carolina. While not the only group in our state that offers boating classes, it is a real benefit to the state to have within its boundaires eight units of what has been called "the largest educational boating organization in the world."

Perhaps you know the work of the Power Squadrons. Perhaps you are one of the many who have become wiser by attending the Squadron's piloting class. But what of surveys and sign posts? Why would an educational group become involved in this? Out of their field? Not at all. For once you understand the willingness of the group to promote safe boating, it is easy to understand such an undertaking. Class work, buoy surveys—it all boils down to safety afloat.

When word came down from U. S. P. S. Headquarters in Englewood, New Jersey, announcing the cooperative program of the Power Squadrons, the Coast and Geodetic Survey, and the Corps of Engineers in which navigational aids would be surveyed, the members of the Raleigh and Durham Squadrons started planning. These two squadrons were jointly assigned to survey aids to navigation in the norheastern part of North Carolina.

Navigational aids are periodically checked, according to the importance of the aid, by the U. S. Coast Guard. Damaged aids are also repaired by the Coast Guard. Likewise, the condition of the channels is checked and any alteration thereto is made usually by the Corps of Engineers with one of several types of dredging systems. And, of course, the Coast and Geodetic Survey is the agency which, among other things, keeps the nation supplied with charts of these waters. All three agencies cooperate in promoting safer navigation.

The reason for soliciting the help of a nongovernmental organization was simply to speed up the survey, to shorten the time between checks. When one imagines the vastness of the navigable waters of the nation or just of this state and the thousands of aids used, it is easy to understand why "all hands on deck" would be the call.

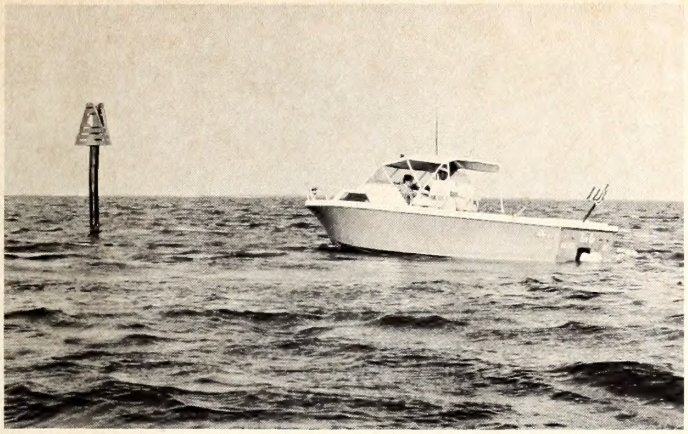
Power Squadrons members, other boating groups, and individual boaters continuously provide the governmental keepers of the waterways with information on damaged aids, obstructions to navigation, etc. Such conditions are either adjusted immediately or the boating public is made aware of the discrepancy in the Coast Guard publication, "Notice to Mariners."

The project for which the Raleigh and Durham Squadrons prepared and which they ultimately accomplished on August 21st of this year, was one of the first insofar as an organized survey by a civilian organization.

Planning by the members of these two squadrons started months prior to the actual survey work. Planning included such things as making arrangements for docking space at Manteo, the base of the operation; boat assignments of areas to be surveyed; emergency procedures, rendezvous times and places; and others such as weather briefings as the date of the cruise neared. To complete preparation, the cruise was named the Tom Smiley Cruise in honor of this member and past commander of the Raleigh Squadron who was instrumental in founding both his own squadron and the Durham group.

Altogether, 18 boats participated in the cruise. Twelve of the 18 were from the Raleigh Squadron and six were from the Durham Squadron. Included in the 18 boats were outboards, inboards, and inboard-outboards or stern driven types. Some of the boats were trailered to Manteo, while others, took water routes from their home-away-from-home dockage areas such as Morehead City.

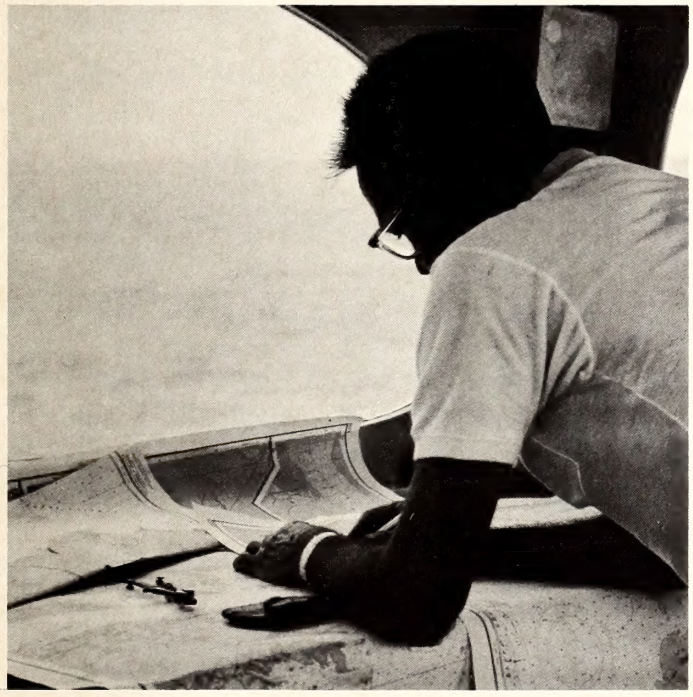
Forty-seven members and guests participated in the survey, not including families who

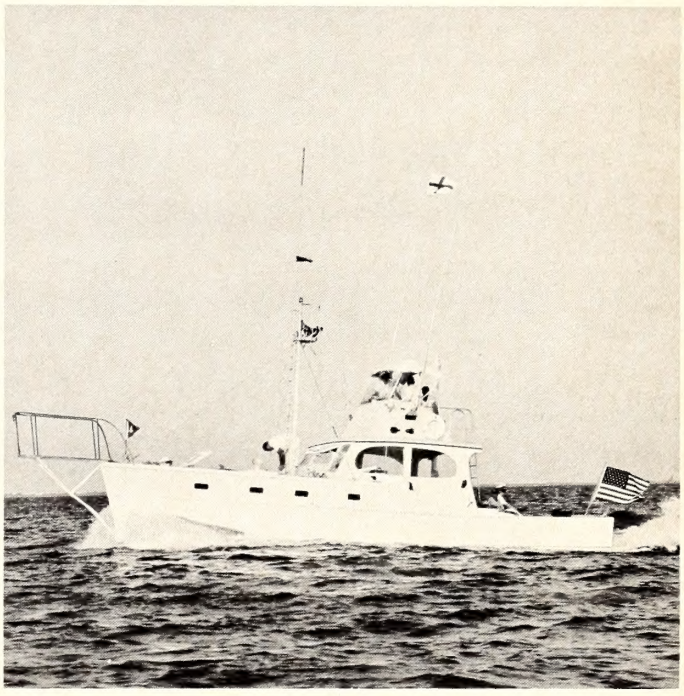


Day marker number 4 looked to be in good shape, but depth had to be checked to detect any shoaling or channel filling.

There are nine U. S. Power Squadrons in North Carolina and one in Rock Hill, S. C., which serve the Tarheel State. The District 27 Commander is Charles Robert Dodson, JN, 2415 Glenwood Avenue, Raleigh. For the name and address of the squadron nearest you, write Boating Safety, Box 2919, Raleigh N. C. 27602.

Piloting Classes begin on January 11, 1966, offered by the Cape Fear Squadron, Commander R. Leon Couch, AP, 135 Pine Cone Road, Wilmington, N. C.; and January 12, offered by the Raleigh Squadron, Commander Robert C. Browning, JN, 829 Bryon Street, Raleigh, N. C.





Commander Tom Smiley checks the course of Flagship "Partner II". This graceful craft owned by J. H. Pou Bailey flies the flag of the original city of Raleigh high on the starboard outrigger.

enjoyed Manteo while the skippers undertook the work at hand.

Guests included USPS officers from the national and district level, officers of the Coast and Geodetic Survey and the Wildlife Resources Commission.

What did the survey reveal? A total of 53 discrepancies were found. Nineteen of the discrepancies were additions of landmarks such as storage tanks, church steeples, etc. Ten hazards such as pilings protruding from the water were found. In the same category, six hazards presently charted could not be located and were so noted. Five cases of shoaling were recorded, and 13 other discrepancies in the miscellaneous category were noted.

The report of the cruise was forwarded through USPS District 27 officers here in North Carolina to Coast Guard Headquarters in Norfolk. As mentioned above, the discrepancies will be made known through the Coast Guard publication, "Notice to Mariners." Later corrections will be made on charts and where applicable corrections to aids or to channels, hazards, etc., will be made. This, then, is what we could call a practical application of the information gained on the cruise. The work will ultimately keep some boaters out of some form of trouble afloat.

Worthy of mention is the fact that the cruise took place without personal injury or serious mishap. This is a good record considering that these waters were new to many of the participants, the vastness of these waters and the number of boats involved.

Obviously, a trip of this nature is not an inexpensive undertaking. This service to the boating public cost the participating members of the two squadrons approximately $6,000. Included in this total would be the cost of fuel for boats, automible expenses, meals, lodging, etc.

Is safe boating the aim of the U. S. Power Squadrons? We can answer with an unqualified, yes.

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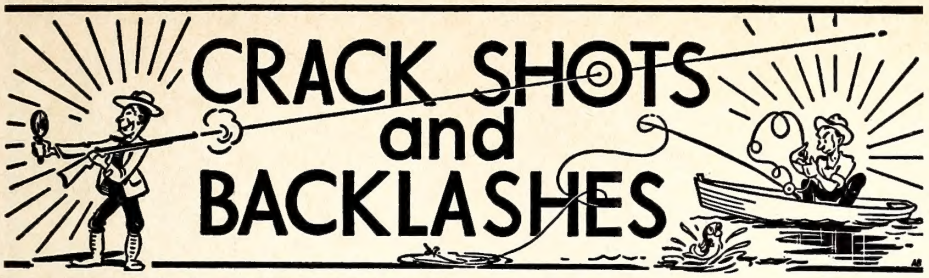


DEPARTMENT OF LETTERS TO THE EDITORS, FIELD NOTES, AND ITEMS OF INTEREST

Conducted By Rod Amundson

If you can believe the almanacs, North Carolina is scheduled to get 26 inches more than the normal snowfall this winter, and if this should be the case, we have a long, hard winter coming up. Such predictions are usually computed on a ouija board, however, and their accuracy is usually based on coincidence instead of scientific prognostication.

Nevertheless, winter almost always presents a problem to wild creatures in the woods and field and waters. The best defense is a good offense, and this applies to weather as well as sports. Thousands of Tarheel farmers are planting shrub lespedeza, serecia lespedeza and multiflora rose to provide winter habitat for farm game species. Countless thousands of householders put up bird feeders to help take care of our song birds.

Despite these efforts, most wildlife forms depend on nature and natural habitat for their well being. Putting up a bird feeder makes us feel better, and the food we put in it certainly helps the birds. But we must rely on nature almost altogether to take care of her own.

Snake Country?

DEAR SIRS: In the August issue of "Outdoor Life" your state is listed as second in the nation in snake bites. This report was a shock to me as we have been considering the Hendersonville area as our retirement location. We do a lot of stream and lake fishing and have a serious interest in the out of doors.

Please outline the locals of the snake situation. It sure did not look good in print. C. W. RICHARDS, FREEPORT, ILL.

The only poisonous snakes in the Hendersonville area are the timber rattler and the northern copperhead—both keep to the uplands away from lakes or streams. Your chances of encountering one are almost zero. —Ed.

Dove Hunting

DEAR SIRS: The amount of attention and space you give to dove shooting in the September issue is noticeable. But one thing is lacking. Please explain why doves can be legally killed as early as September 11 when it is evident and known to all wildlife observers, that young ones are still in nests and can only perish miserably when their parents are killed by gunfire. I have been a hunter myself and still keep a bird dog, but I can't understand why parent doves must be shot as early as September 11. The final result must be a severe thinning of birds that have their place in nature's program. PHILLIP RUSSELL, CHAPEL HILL

Dear Mr. Russell:

Research has shown that dove nest throughout the year except for a brief period from late November to early January.

It does seem cruel to kill adult doves with young on the nest but it would seem equally cruel that they are also killed by predators or disease. Futhermore, both male and female adult doves secrete "pigeon milk" that is fed to the young, mixed with regurgitated and partly digested seeds. Since one parent bird usually stays near the nest while the other is feeding, the chances of both parents being killed by gunfire are greatly reduced.

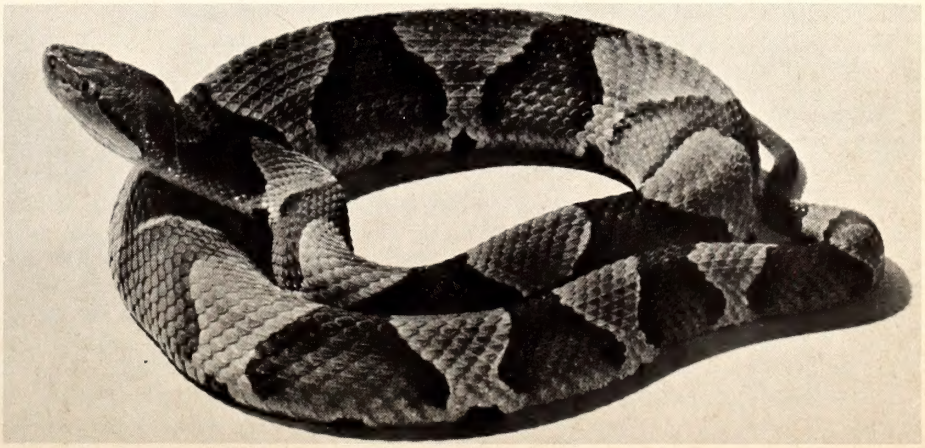
Research has further shown that up to 80 per cent of dove populations may be harvested by hunters during the fall and still leave a breeding population sufficient to produce another crop. Despite heavy early gunning over the past decade there are now more doves in existence than there were ten years ago.

A drastic cut in the dove season would arouse the ire and concentrate the efforts of some 150,000 license-buying dove hunters. We must remember that these and other license-buying hunters foot the entire bill for wildlife conservation in our state and nation. They pay for the protection of non-game species ranging from humming birds to bald eagles. If we were to deprive these people of a large segment of their sport by drastically reduced seasons, bird watchers (I am one) would have to pay for the privilege of bird watching or watch the birds disappear.—Ed.

To the Point

DEAR SIRS: I would like to say how much I enjoy reading your magazine which was given to me by a North Carolinian with whom I have enjoyed hunting at your Lake Mattamuskeet. I do not know when my subscription will lapse and would appreciate your advising me of this so that I can maintain it.

The purpose in my writing this letter is to relate something my six year old boy said in conjunction



Don't count on the copperhead avoiding streams at all times. Be on guard.

Mr. Raymond A. Watson, Wildlife Protection Supervisor in District Two since March 1, 1948 passed away suddenly at his home at Route 2, New Bern, North Carolina, on October 16, 1965. One of the Commission's most experienced and able supervisors, Mr. Watson had first been employed as a Game and Fish Protector by the Department of Conservation and Development on September 1, 1943. He was a native of Craven County and a graduate of Jasper Consolidated High School in 1925. He studied agriculture at N. C. State College, and during the time prior to his employment as a wildlife law enforcement officer, he worked as Assistant County Agent in Craven County. He, also, worked as a Livestock Field Man for the NCERA, and as a Labor Relations Officer with the Works Progress Administration.

Mr. Watson, in addition to being a top-flight enforcement officer, had the ability to supervise his personnel in such a manner as to command respect and at the same time achieve the maximum of performance and effectiveness. He will be sorely missed.

with looking at your magazine which I thought was very humorous.

After his first day of school he was asked to look up words with the letter "L" in various magazines. He picked up one of the issues of your magazine and in looking through it saw a picture of a setter on point. I had just acquired a one-half interest in a setter which we had kept at my home for several weeks. His name is Thunder. When Parker saw the setter his comment was "Here is a dog just like Thunder except this dog has a broken leg."

My compliments again for a very fine magazine.—RANDOLPH HAYES, ATLANTA, GEORGIA

Dove Tale

DEAR SIRS: I just finished reading that article on dove hunting in the September issue of your magazine, and somehow it got me to thinking about a story I heard many times as a boy. If that tale had been true, dove hunting would have been so messy nobody would have bothered.

I don't know how many of your readers have heard this one, but when I was just a kid in Spray, the old folks around there used to tell us never to shoot doves. The way they told it doves were special birds —birds of the Bible and with a special nitch in the scheme of things. More than one oldster told me, "better not shoot them doves, Keith. If you do, blood will run from the end of your rifle barrel."

In those days, about the only rifle I was trusted with was a B-B. We used to kill sparrows, starlings and blackbirds all the time, but never doves.

I don't recall how old I was, but I remember that a friend, Delano Taylor, and I stalked a dove like a couple of Indians and shot it with our Daisies. We sat in a pine thicket for a long time waiting for the guns to bleed. We didn't say much to each other, and we didn't laugh. It hadn't been long since I had met Santa Claus face to face. KEITH HUNDLEY, RALEIGH

"No! No! No!"

DEAR SIRS: Re your September issue of **Wildlife in North Carolina:**

In article "Doves—the Hard Way," by Mr. Ervin Ray; Mr. Ray makes several statements about the care and feeding of a muzzle loading shotgun. Some of these statments may cause some one to be killed.

Mr. Ray has given several defects to watch for in an old muzzle loading shotgun; but he leaves out two of the most important: 1. A rusted out nipple, 2. A rusted out breech plug. Always get a good gunsmith to take the gun apart for close inspection, and to test-fire it with a 200%-300% proof load.

Mr. Ray says put a .135 inch thick cardboard wad over the powder. This is okay, but a thick felt wad, soaked (not dripping) in Hoppe's Nitro Powder Solvent (or Crisco) is much better. In addition to making a better gas seal and being easier to load, the wad as described will clear out most of the black powder residue at each shot.

Mr. Ray says "cock the hammers and place a percussion cap on the nipple." No, No, No, No!!! For the first case, if you have two hammers you are bound to have two nipples, so "nipple" should be plural. In the second case, DON'T cock the hammers! Pull both hammers back to half-cock not full cock! And don't put the caps on at all until you are in the target area.

Mr. Ray says that, in event you have to wait for a short "ease the hammers down to half-cock . . ." No, no, no, no! In the first case, you should not have but one hammer on full-cock at once. If both are on full-cock, the jar of firing one barrel may cause the other hammer to fall also and fire the other barrel. The second and main case is, don't ever, on any gun with a hammer and half-cock arrangement, let the hammer down from full cock to half-cock. Always point the gun to the ground, let the hammer down from full cock all the way down! (easy, of course!)

Now, pull the hammer gently back to half-cock. The reason for this is that in going from full-cock to half-cock, the trigger rear may catch on the shoulder of the half-cock notch, not down in the notch. Therefore, if the hammer does this, and the gun is jarred and/or the trigger is pulled the hammer may slip off this shoulder and drop down and fire.

Hope you can see fit to publish this before somebody causes an accident. Remember, guns don't kill people; people kill people! JAMES H. BOATWRIGHT, WINSTON-SALEM

Housing Wanted

DEAR SIRS: I have just finished reading the October issue of **Wildlife In North Carolina** and enjoyed it very much. You do not have to live

in North Carolina to receive enjoyment from this magazine.

I was especially interested in the article on the building of bluebird houses. Here in Tennessee we are also having the problem of the disappearance of this much enjoyed little songbird. Our Scout Troop here has been for a long time working on this problem. We have been making bird houses for these birds whose natural homes have been destroyed by man's clearing of land. We would like, if possible, a copy of the plans of the bluebird house which appears on page 28 of this issue. Thank you very much for this article.

I have also enjoyed very much in past issues the many stories of waterfowl. We have a 12-acre lake out in a secluded wooded area and I

January, 1966, "Wildlife" will begin a two-part story about the wood duck.

would like to know what we might do to attract various waterfowl to stay here. We have on numerous occasions found teal, and mallard resting on it. We can't go to any great expense, but do love to have them to watch any season of the year. These waterfowl are my favorite game birds. This year in Tennessee we have such a limited number of ducks (1 mallard a day) we can kill, that the post office has yet to sell a Duck Stamp.

If possible, I would also like a copy of the plans for building wood duck and other nesting boxes; we could have quite a few wood ducks nest here. Thank you very much. JIM WILDER, JACKSON, TENN.

Something to Think About

President Johnson said in October when discussing the newly enacted water pollution bill that, "No one has a right to use America's rivers and America's waterways, that belong to all the people, as a sewer."

Let us apply this philosophy to a similar situation. Should any one have the right to alter natural streams which belong to all the citizens of North Carolina and change these streams into sterile drainage ditches? Should public funds be used to destroy the public resources of fish and game in these areas?

Conservationists in North Carolina refer to the problem as channelization and/or ditching. Conservationists in France have called a similar problem "tidy minded canalization." Call it what you will. Call it progress or call it destruction, the outcome is the same. Clean, clear streams flowing through hardwood bottom lands or gum swamps, all a haven for fish and game, are turned into calamities like the one pictured above.

The picture shows the remains of upper Swift Creek in Craven County. Such an operation, it has been determined, virtually destroys the fishery and, of course, drains the surrounding wetlands which are so vital to wildlife. These projects are literally sweeping eastern North Carolina. Has your favorite creek been altered? If it has not, you can bet that it is on the list. Surely this is something to think about. **John R. Parker, Jr.**

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New Address_____

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Zip Code_____

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Please notify us promptly of change of address.

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Please notify us promptly of change in address
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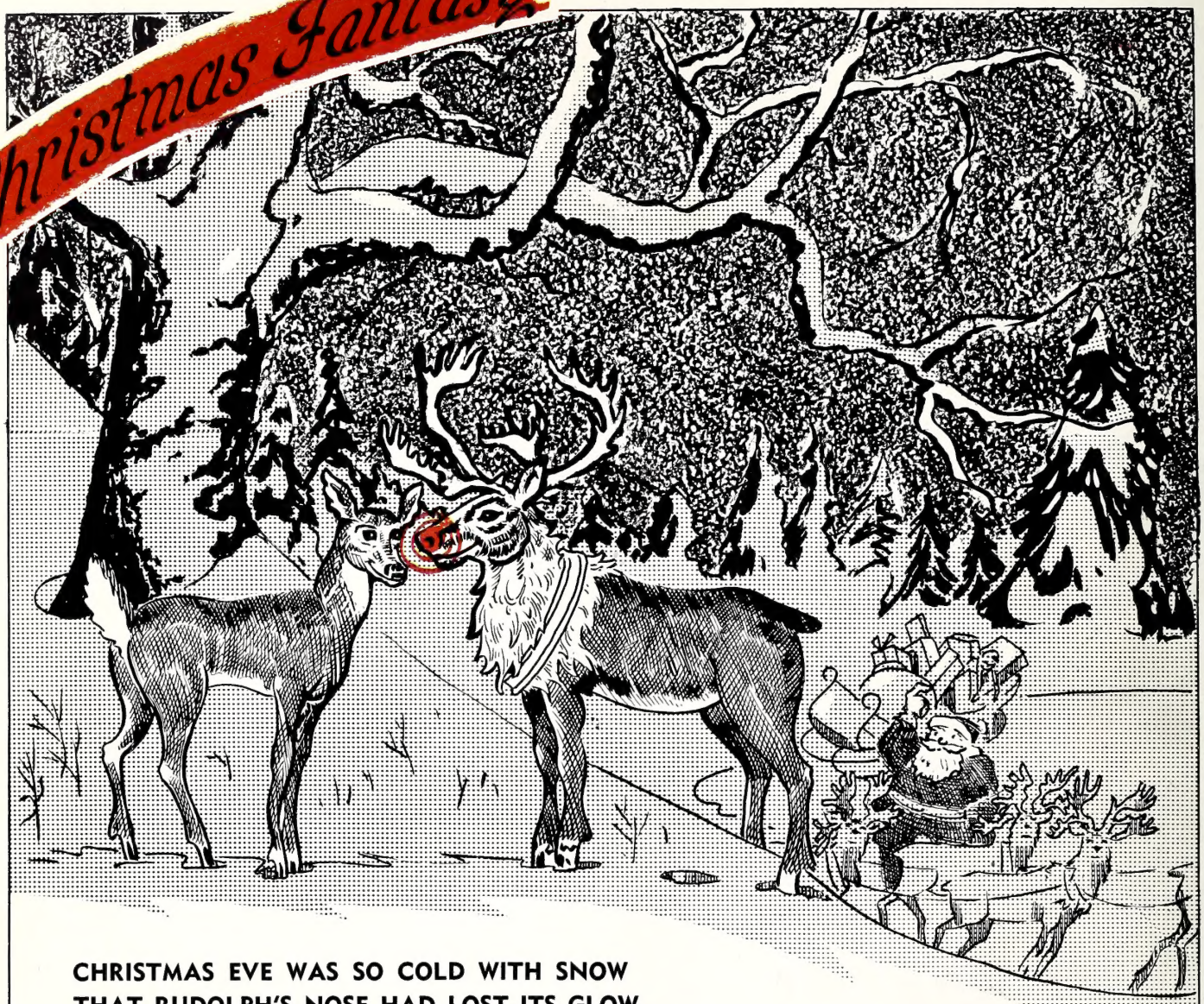
Christmas Fantasy



CHRISTMAS EVE WAS SO COLD WITH SNOW
THAT RUDOLPH'S NOSE HAD LOST ITS GLOW
AND SANTA THOUGHT IT WOULD BE BEST
TO STOP AWHILE FOR FOOD AND REST.
THUS BY A STREAM IN TARHEEL LAND
SANTA STOPPED WITH HIS LITTLE BAND.
WHEN LO! FROM THE WOODS THERE DID APPEAR
CAROLINE, THE WHITE-TAILED DEER
AND RUDOLPH, SEEING CAROLINE
FELT HIS NOSE GROW WARM AND START TO SHINE.
AND NOW, IT IS SAID, THROUGH THE REST OF THAT NIGHT
THEY WERE LED BY A TAIL OF SHIMMERING WHITE!

Al Barrett

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